



## Maintenance

SpaceFox, Space Cross, Suran, Suran  
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## Maintenance

### Heading

1. General engine overview
2. Maintenance plans - Models ▶2004 and from 2005 ▶2008
3. General aspects
4. Service descriptions
5. Additional jobs based on country legislation



Technical information should always be available to the foremen and mechanics, because their careful and constant adherence to the instructions is essential to ensure vehicle road-worthiness and safety. In addition, the normal basic safety precautions for working on motor vehicles must, as a matter of course, be observed.



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## 1 General engine overview

Identification letters		ASY	BAH	BLH	BPA
Engines →		Diesel engine	Gasoline	Gasoline	Total flex
Production		as from 01.11	as from 11.24.03	as from 11.17.03	as from 10.18.04
Limit value for emissions according to		EU 3 Norm	Phase III of resolution n° 15 (12/13/95) of CON-AMA	Tier I + OBD	Proconve L 4 Phase IV of resolution n° 15 (12/13/95) of CON-AMA
Engine emissions indicator light		not	not	not	not
Number of cylinders/ Valves per cylinder		4 / 2	4/2	4/2	4/2
Capacity l		1.9	1.6	1.6	1.6
Power (gasoline)	kW/ rpm	-	74/5750	74/5750	74,0/5750
Power (alcohol)	kW/ rpm	-	-	-	76,0/5750
Power (gasoline)	kW/ rpm	47/4000	-	-	-
Engine torque (gasoline)	Nm/ rpm	-	140,0/3250	140,0/3250	140,0/3250
Engine torque (alcohol)	Nm/ rpm	-	-	-	142,0/3250
Engine torque (Diesel)	Nm/ rpm	125/1600...2800	-	-	-
Bore	Ø mm	79,5	76,5	76,5	76,5
Stroke	mm	86,4	87,0	87,0	87,0
Compression ratio		19,5	10,8: 1	10,8: 1	10,8: 1
Injection/Ignition		aspirated Diesel direct injection (SDI)	ME 7.5.10 <sup>1)</sup>	ME 7.5.10 <sup>2)</sup>	ME 7.5.10 <sup>2)</sup>
Octane rating (ROZ)	minimum	-	95 lead-free	95 lead-free	alcohol or gasoline with 95 lead-free
Cetane	minimum	49	-	-	-
Electronic accelerator		yes	yes	yes	yes
Self-diagnosis		yes	yes	yes	yes
Catalyzer unit		yes	yes	yes	yes
Lambda regulation		1 lambda probes	1 lambda probes	2 lambda probes	1 lambda probes
Exhaust gas recirculation		yes	not	not	not
Exhaust gas turbo-charger		not	not	not	not

1) 4BV Injection system with immobilizer

2) ME 7.5.10 injection system with immobilizer

Identification letters		CCRA	CFZA
Engines →		Total flex	Gasoline
Production		as from 08.04	as from 08.06



Identification letters		CCRA	CFZA
Limit value for emissions according to		Proconve L 5 Phase IV of resolution n° 15 (12/13/95) of CON-AMA <sup>5)</sup>	Proconve L 5 Phase IV of resolution n° 15 (12/13/95) of CON-AMA <sup>5)</sup>
Engine emissions indicator light		yes	yes
Number of cylinders/Valves per cylinder		4/2	4/2
Capacity	l	1,6	1,6
Power (gasoline)	kW/rpm	74,0/5250	74,0/5250
Power (alcohol)	kW/rpm	76,0/5250	-
Engine torque (gasoline)	Nm/rpm	151,0/2500	143,0/2500
Engine torque (alcohol)	Nm/rpm	153,0/2500	-
Bore	mm	76,5	76,5
Stroke	mm	87,0	87,0
Compression ratio		12,0:1	10,8:1
Injection/Ignition		ME 7.5.30 <sup>4)</sup>	ME 7.5.30 <sup>4)</sup>
Octane rating (ROZ)	minimum	91 lead-free	91 lead-free
Electronic accelerator		yes	yes
Self-diagnosis		yes	yes
Catalyzer unit		yes	yes
Lambda regulation		1 lambda probes	2 lambda probes <sup>3)</sup>
Exhaust gas recirculation		not	not
Exhaust gas turbocharger		not	not

3) Second lambda probe valid for Mexican version only

4) 4BV Injection system with immobilizer

5) As from model-year 2010 Proconve L 5 Phase V of resolution n° 15 (12/13/95) of CONAMA





## 2 Maintenance plans - Models ►2004 and from 2005 ►2008

Delivery inspection ⇒ [page 5](#)

Oil change service ⇒ [page 6](#)

Inspection service ⇒ [page 8](#)

### 2.1 Maintenance plans - (Models 2009►) - Every 10,000 km or 12 months

Delivery inspection ⇒ [page 5](#)

Oil change service (Models 2009 and 2010►) included in preven-  
tive maintenance ⇒ [page 17](#)

- Preventive Maintenance (Models 2009 and 2010►)  
⇒ [page 18](#)

### 2.2 Service charts

Service Charts - (Models 2009 and 2010) ⇒ [page 11](#)

Service Charts - (Models 2010►) ⇒ [page 14](#)

VW norms regarding engine oil ⇒ [page 3](#)

Filter replacement intervals ⇒ [page 3](#)

Toothed belt replacement intervals ⇒ [page 4](#)

Elastic Poly-V belt replacement interval ⇒ [page 4](#)

Service intervals ⇒ [page 27](#)


#### 2.2.1 VW norms regarding engine oil

VW norms 502 00
Gasoline/Total Flex engines

#### 2.2.2 Engine oil properties

Multi-purpose oils according to VW norms 502 00:

- ◆ Is indicated for use in adverse operating conditions, such as bad roads, maximum cargo, towing operations, frequent operation in mountainous regions and in hot climate.



**WARNING**

◆ *Observe disposal regulations!*

#### 2.2.3 Filter replacement intervals

Filter replacement intervals	
<b>ENGINE OIL FILTER</b>	
2005 ►2009 and 2010	every 10,000 km or 6 months (for 2009 e 2010 only for 1.0 l engines - decided in week 43 of 2009, replacing interval of 10,000 km or 12 months)
2010►	every 10,000 km or 12 months (unchanged only for 1.6 l engines - decided in week 43 of 2009)
<b>AIR FILTER</b>	
2005 ►2008	every 30,000 km or 24 months



Filter replacement intervals	
2009 and 2010	every 20,000 km or 12 months (1.0 l engine) and every 30,000 km or 18 months (1.6 l engine) (for 2009 and 2010 only for 1.0 l engines - decided in week 43 of 2009, replacing interval of 10,000 km or 12 months)
2010 ►	every 20,000 km or 24 months (unchanged only for 1.6 l engines - decided in week 43 of 2009)
FUEL FILTER	
gasoline engines	every 30,000 km
Total flex engines ►2009 and 2010	every 10,000 km or 6 months (for 2009 e 2010 only for 1.0 l engines - decided in week 43 of 2009, replacing interval of 10,000 km or 12 months)
Total flex engines 2010 ►	every 10,000 km or 12 months (unchanged only for 1.6 l engines - decided in week 43 of 2009)
DUST AND POLLEN FILTER	
►2008	every 30,000 km
2009 and 2010	every 30,000 km or 18 months (unchanged only for 1.0 l engines - decided in week 43 of 2009, replacing interval of 10,000 km or 12 months)
2010 ►	every 20,000 km or 24 months (unchanged only for 1.6 l engines - decided in week 43 of 2009)

## 2.2.4 Toothed belt replacement intervals

Toothed belt replacement intervals					
Engines					
En- gine type	MKB	Period of time	Remark	Replace- ment in- terval	Tensioner roller
1.6 l	CCRA and CFZA	2009 and 2010 vehi- cles	---	every 90,000 km or 54 months	---
1.6 l	CCRA and CFZA	2010 ► ve- hicles	---	every 90,000 km or 48 months	---

## 2.2.5 Elastic Poly-V belt replacement interval

Elastic Poly-V belt replacement interval				
Engines				
En- gine type	MKB	Period of time	Remark	Replacement interval
1.6 l	CCRA	2009 and 2010 vehicles	---	every 90,000 km or 54 months
1.6 l	CCRA	2010 ► vehi- cles	(unchanged only for 1.6 l engines - de- cided in week 43 of 2009)	every 90,000 km or 48 months





## 2.3 Delivery inspection

The delivery inspection is valid for maintenance plans for ▶2005 to ▶2008 models as well as maintenance plans for 2009 and 2010▶.

- ◆ The order of each service operation was tested and optimized. They must be maintained in order to avoid unnecessary idle periods during service.
- ◆ For delivery inspection, the vehicle must be washed and free of wax.
- ◆ Vehicles after a long stay in the parking lot: On vehicles manufactured more than 5 months previously, engine oil, oil filter and the sealing ring for the oil filter draining plug are to be replaced!
- ◆ If the battery is disconnected, the automatic window closure function of the power windows is not active. In this case, the function must be re-programmed before vehicle delivery. The battery must not be disconnected after re-programming. Power windows - re-programming ⇒ [page 36](#)
- ◆ Ask the client if he wants new windshield wiper blades to be installed and the product assembled Window cleaner -G 052 131 A1- up to 07/2005 and Window cleaner -G 052 184 A2- as from 08/2005 or Anti-freeze protector and cleaner -G 052 164- to be added to the windshield/rear window wiper system.

Application	Additive for windshield/rear window washer	Proportion
Countries with arctic climate	-G 052 164 A1- or -G 052 164 A2-	300 ml of additive to 700 ml of water
Countries with tropical climate	-G 052 184 A2- or -G 052 131 A2-	100 ml of additive to 990 ml of water 50 ml of additive to 850 ml of water

Work load	Service
- Self-diagnosis: check fault memories of all systems with Diagnosis, measurement and information system -VAS 5051- or -VAS 5052- .	⇒ <a href="#">page 23</a>
- Battery: Check battery terminals to assure proper seating.	⇒ <a href="#">page 37</a>
- Battery: Check charge capacity ◆ vehicle must have been switched off for at least 2 hours.	⇒ <a href="#">page 40</a>
- Airbag: Check actuator.	
- Ignition cables and spark plug connectors: Check fastening condition.	
- Wheel fastening screws: Apply specified torque.	⇒ <a href="#">page 36</a>
- Switched, electric consumers, indicators, and other controls: Check the operation.	
- Install all vehicle components (if available): Mats, wipers, spoiler, roof antenna, hubcaps, linings, super hubcaps, and covers.	
- Clock (if available): Check function and set time.	⇒ <a href="#">page 32</a>
- Radio: Activate anti-theft code.	⇒ <a href="#">page 36</a>
- Fire extinguisher: Check fastening, charge condition, and remove plastic protection.	⇒ <a href="#">page 35</a>
- Radio label (part of the radio instruction manual): take sticker with serial-number and fixed code.	
- Windshield/rear window wiper and washer: Check function; if necessary, adjust nozzles and top up washer fluid incl. additive to maximum level.	⇒ <a href="#">page 47</a>
- Engine oil: Adjust to correct level. ◆ Only for vehicles manufactured less than 5 months previously	⇒ <a href="#">page 42</a>



Work load	Service
– Engine oil and sealing ring for engine oil drain plug: Replace. ◆ Only for vehicles manufactured more than 5 months previously	⇒ <a href="#">page 50</a>
– Engine oil filter: Replace. ◆ Only for vehicles manufactured more than 5 months previously	⇒ <a href="#">page 51</a>
– Engine and components in engine compartment (upper section): Visual inspection for damage and leakages.	⇒ <a href="#">page 53</a>
– Coolant: Adjust to correct level.	⇒ <a href="#">page 64</a>
– ATF oil reservoir for power steering: Adjust to correct level.	⇒ <a href="#">page 70</a>
– Brake fluid level: Check and adjust to correct level, if necessary.	⇒ <a href="#">page 77</a>
– Safety devices for transport: Remove	⇒ <a href="#">page 44</a>
– Vehicle lower section; engine and components in engine compartment, brakes, axles, transmission/differential shafts, steering, bellows for articulated joints, flexible tubing, fluid reservoir: Perform visual inspection for possible damage and leakages (without removing lower engine compartment noise insulator).	⇒ <a href="#">page 53</a>
– Lower body section protector: Perform visual inspection for damage.	⇒ <a href="#">page 61</a>
– Plastic protection for seats, lower door linings, sun visors and mats: Remove.	
– Tires (including spare wheel): Check.	⇒ <a href="#">page 48</a>
– Tire pressure (including spare wheel): Adjust	⇒ <a href="#">page 49</a>
– Vehicle inner space: Check cleanliness, and clean, if necessary: front and rear seats, inner linings, carpet/mats, and windows.	
– Vehicle outside - check and clean: Paint, decorative elements, windows, front and rear window wipers.	
– Maintenance interval indicator (if available): Reset to 0.	⇒ <a href="#">page 34</a>
– Maintenance and guarantee booklet: Register delivery inspection and indicate next service.	
– Service label: Register date for next service (including brake fluid replacement) and fasten label to left side of instrument panel or to left door B column.	⇒ <a href="#">page 22</a>
– Check if on-board literature is complete and prepare for delivery to the client.	
– Perform test cycle.	⇒ <a href="#">page 79</a>

## 2.4 Engine oil change service (2005 ► to ►2008 models)

Service according to time or mileage

Vehicles with "Service according to time or mileage" have PR numbers: QG0.



### Note

- ◆ Before proceeding with the work, check if vehicle corresponds to 15,000 km/12 months service or 10,000 km/6 months service
- ◆ Use oils with high lubrication capacity in accordance with VW specifications 502 00 (gasoline, alcohol, and Total flex).



## Indications for service performance

The order of each service operation was tested and optimized. They must be maintained in order to avoid unnecessary idle periods during service.

If the battery is disconnected, the automatic window closure function of the power windows is not active. In this case, the function must be re-programmed before vehicle delivery. The battery must not be disconnected after re-programming. Power windows - re-programming ➔ [page 36](#)

If faults are detected during oil change service, adopt necessary measures for repair and inform client accordingly.

Ask the client if he wants new windshield wiper blades to be installed and the product assembled Window cleaner -G 052 131 A1- up to 07/2005 and Window cleaner -G 052 184 A2- as from 08/2005 or Anti-freeze protector and cleaner -G 052 164- to be added to the windshield/rear window wiper system.

Application	Additive for windshield/rear window washer	Proportion
Countries with arctic climate	-G 052 164 A1- or -G 052 164 A2-	300 ml of additive to 700 ml of water
Countries with tropical climate	-G 052 184 A2- or -G 052 131 A2-	100 ml of additive to 990 ml of water 50 ml of additive to 850 ml of water



### Note

Before proceeding with the work, check if vehicle corresponds to 10,000 km/6 months service.

A tolerance is permissible "up to 1,000 km" above or below specified mileage for mileage-related service and "a month" earlier or later than specified for time-related service.

Oil change service	Service
<b>Engine compartment</b>	
– Engine oil: Fill with specified oil.	➔ <a href="#">page 52</a>
– Battery: Adjust electrolyte to correct level (except maintenance-free batteries).	
<b>Vehicle on elevator platform</b>	
– Engine oil: Drain or aspirate.	➔ <a href="#">page 50</a>
– Engine oil drain plug with sealing ring: Replace	➔ <a href="#">page 50</a>
– Engine oil filter: Replace.	➔ <a href="#">page 51</a>
– Front brake pads and rear brake linings: Check thickness.	➔ <a href="#">page 55</a>
– Fuel filter: Replace. ♦ Total Flex engines.	➔ <a href="#">page 74</a>
<b>Finalizing tasks</b>	
– Maintenance and guarantee booklet: Register date and mileage for next service	
– Service label: Register date for next service (including brake fluid replacement) and fasten label to left side of instrument panel or to left door B column.	➔ <a href="#">page 22</a>





## 2.5 Inspection service (2005 ➤ to ➤ 2008 models)

### Service according to time or mileage

Vehicles with "Service according to time or mileage" have PR numbers: QG0.

### Inspection intervals

Vehicles with time-related or mileage-related service, every 12 months, every 30,000 km, and every 60,000 km.

If a vehicle runs 30,000 km, 60,000 km etc. in less than 12 months, the 30,000 km, 60,000 km etc. Inspection Service must be performed together with the 12 months Inspection Service.

If a mileage of 30,000 or 60,000 km is reached after the 12 months Inspection Service has been performed, it will only be necessary to execute those items that are exclusive to the Inspection Service every 30,000 km or the Inspection Service every 60,000 km.

A tolerance is permissible "up to 1,000 km" above or below specified mileage for mileage-related service and "a month" earlier or later than specified for time-related service.



### Note

- ◆ Inform the client if, within the performance of a service, problems are detected that require repair measures.
- ◆ Use oils with high lubrication capacity in accordance with VW specifications 502 00 (gasoline, alcohol, and Total flex).

### Indications for service performance

The order of each service operation was tested and optimized. They must be maintained in order to avoid unnecessary idle periods during service.

If the battery is disconnected, the automatic window closure function of the power windows is not active. In this case, the function must be re-programmed before vehicle delivery. The battery must not be disconnected after re-programming. Power windows - re-programming ➔ [page 36](#).

If faults are detected during oil change service, adopt necessary measures for repair and inform client accordingly.

Ask the client if he wants new windshield wiper blades to be installed and the product assembled Window cleaner -G 052 131 A1- up to 07/2005 and Window cleaner -G 052 184 A2- as from 08/2005 or Anti-freeze protector and cleaner -G 052 164- to be added to the windshield/rear window wiper system.

Application	Additive for windshield/rear window washer	Proportion
Countries with arctic climate	-G 052 164 A1- or -G 052 164 A2-	300 ml of additive to 700 ml of water
Countries with tropical climate	-G 052 184 A2- or -G 052 131 A2-	100 ml of additive to 990 ml of water 50 ml of additive to 850 ml of water

Service for vehicles with "Service according to time or mileage"	Service
Electrics	
- Front lighting: Check function of parking light, low beams, high beams, fog lights, direction indicator and warning lights system.	



Service for vehicles with "Service according to time or mileage"	Service
– Rear lighting: Check function of brake lights (including the third brake light) tail-lights, back-up lights, fog-lights, license plate illumination, luggage compartment illumination, direction indicator and warning lights.	
– Passenger compartment illumination, cigar lighter, horn, and control lights: Check function.	
– Driver and passenger airbags: Perform visual inspection to detect external damage	⇒ <a href="#">page 45</a>
– Self-diagnosis: Check fault memories of all systems with Diagnosis, Measurement and Information System -VAS 5051A/52-	⇒ <a href="#">page 23</a>
– Dust and pollen filter: Replace filter element. ◆ every 30,000 km	⇒ <a href="#">page 71</a>
<b>Vehicle outside</b>	
– Windshield and rear window wipers: Check the operation.	⇒ <a href="#">page 46</a>
– Windshield and rear window wiper blades: Check resting position and adjust, if necessary; for wiper blades not working properly: Correct wiping angle.	⇒ <a href="#">page 47</a>
– Body and paint: Check for damage.	
<b>Tires and wheels</b>	
– Spare wheel tire: Check rolling surface and tire side conditions, and tread depth	⇒ <a href="#">page 48</a>
– Left front wheel tire: Check rolling surface and tire side conditions, and tread depth	⇒ <a href="#">page 48</a>
– Left rear wheel tire: Check rolling surface and tire side conditions, and tread depth	⇒ <a href="#">page 48</a>
– Right rear wheel tire: Check rolling surface and tire side conditions, and tread depth	⇒ <a href="#">page 48</a>
– Right rear wheel tire: Check rolling surface and tire side conditions, and tread depth	⇒ <a href="#">page 48</a>
– Tire pressure (including spare wheel): Adjust	⇒ <a href="#">page 49</a>
<b>Lower part of the vehicle</b>	
– Engine oil: Drain or aspirate ◆ Inspection service with engine oil change	⇒ <a href="#">page 50</a>
– Engine oil filter: Replace	⇒ <a href="#">page 51</a>
– Engine oil drain plug with sealing ring: Replace	⇒ <a href="#">page 50</a>
– Engine and components in engine compartment (lower section): Perform a visual inspection to detect any leakages or damage.	⇒ <a href="#">page 53</a>
– Poly-V belt: Check condition. ◆ every 60,000 km	⇒ <a href="#">page 53</a>
– Transmission: Check for damage or leakages, including universal joint belows condition.	⇒ <a href="#">page 54</a>
– Manual gearbox: Check oil level. ◆ every 30,000 km	⇒ <a href="#">page 54</a>
– Brake system: Perform visual inspection to detect damage and leakages	⇒ <a href="#">page 55</a>
– Front brake pads and rear brake linings: Check thickness.	⇒ <a href="#">page 55</a>
– Underfloor protection: Perform visual inspection to detect damage.	⇒ <a href="#">page 61</a>
– Steering bar articulations. Check clearance, fastening, and condition of protection boots.	⇒ <a href="#">page 61</a>
– Front suspension arm articulations: Perform a visual inspection of fastening, clearance as well as leakage and damage to sealing cauls.	⇒ <a href="#">page 64</a>
– Exhaust system: Perform a visual inspection to detect any leakages or damage.	





Service for vehicles with "Service according to time or mileage"	Service
<ul style="list-style-type: none"> <li>– Fuel filter: Replace.</li> <li>◆ every 30,000 km</li> <li>◆ Gasoline engines</li> </ul>	➤ <a href="#">page 74</a>
<ul style="list-style-type: none"> <li>– Fuel filter: Replace.</li> <li>◆ Total Flex engines</li> </ul>	➤ <a href="#">page 74</a>
<b>Engine compartment</b>	
<ul style="list-style-type: none"> <li>– Engine and components in engine compartment (upper section): Perform visual inspection to detect damage and leakages.</li> </ul>	➤ <a href="#">page 53</a>
<ul style="list-style-type: none"> <li>– Windshield/rear window washer: Adjust water jet from nozzles and adjust fluid and additive in reservoir to correct level.</li> </ul>	➤ <a href="#">page 46</a>
<ul style="list-style-type: none"> <li>– Engine oil: Fill with specified oil.</li> <li>◆ Inspection service with engine oil change</li> </ul>	⇒ <a href="#">page 52</a>
<ul style="list-style-type: none"> <li>– Engine oil: top up oil.</li> <li>◆ Inspection service without engine oil change</li> </ul>	⇒ <a href="#">page 42</a>
<ul style="list-style-type: none"> <li>– Engine coolant: Correct anti-freeze proportion and adjust level.</li> </ul>	⇒ <a href="#">page 64</a>
<ul style="list-style-type: none"> <li>– Spark plugs: replace.</li> <li>◆ Engine CFZA: Every 4 years or 60,000 km, whichever occurs first.</li> <li>◆ Engine CCRA: Every 4 years or 40,000 km, whichever occurs first.</li> </ul>	⇒ <a href="#">page 67</a>
<ul style="list-style-type: none"> <li>– Toothed belt driving camshaft: Check condition.</li> <li>◆ After 90,000 km and then every 30,000 km.</li> </ul>	⇒ <a href="#">page 72</a>
<ul style="list-style-type: none"> <li>– Air filter: Replace filter element and clean filter housing.</li> <li>◆ Every 4 years or 60,000 km, whichever occurs first.</li> <li>◆ Engine: ASY</li> </ul>	⇒ <a href="#">page 73</a>
<ul style="list-style-type: none"> <li>– Air filter: Replace filter element and clean filter housing.</li> <li>◆ Every 2 years or 30,000 km, whichever occurs first</li> <li>◆ Engines: BAH, BLH, BPA, CCRA, and CFZA</li> </ul>	⇒ <a href="#">page 74</a>
<ul style="list-style-type: none"> <li>– Brake fluid: Replace.</li> <li>◆ Every 2 years.</li> <li>◆ Additional work to be paid for separately!</li> </ul>	⇒ <a href="#">page 74</a>
<ul style="list-style-type: none"> <li>– Brake fluid: Adjust to correct level (depending on brake pad wear).</li> </ul>	➤ <a href="#">page 77</a>
<ul style="list-style-type: none"> <li>– Battery: Adjust electrolyte to correct level (except maintenance-free batteries).</li> </ul>	
<ul style="list-style-type: none"> <li>– Power steering: Check oil level.</li> <li>◆ Every 60,000 km</li> </ul>	⇒ <a href="#">page 70</a>
<b>Finalizing tasks</b>	
<ul style="list-style-type: none"> <li>– Air pressure of 4 tires and spare wheel: Check.</li> </ul>	⇒ <a href="#">page 48</a>
<ul style="list-style-type: none"> <li>– Headlight adjustment: Check</li> <li>◆ Every 30,000 km.</li> </ul>	⇒ <a href="#">page 78</a>
<ul style="list-style-type: none"> <li>– Maintenance and guarantee booklet: Register date and mileage for next service</li> </ul>	
<ul style="list-style-type: none"> <li>– Service label: Register date for next service (including brake fluid replacement) and fasten label to left side of instrument panel or to left door B column.</li> </ul>	➤ <a href="#">page 22</a>
<ul style="list-style-type: none"> <li>– Perform test cycle.</li> </ul>	➤ <a href="#">page 79</a>



## 2.6 Maintenance plans - (Models 2009 and 2010)



### WARNING

*Before proceeding with the work, check if vehicle corresponds to 10,000 km/6 months service.*

### 2.6.1 Service charts

The services below are to be performed every 10,000 km or 6 months, whichever occurs first, except brake fluid replacement which is to be executed every 2 years ⇒ [page 74](#).



### Note

- ◆ *Inspection and replacement dates specified in service charts must be strictly observed. Specified intervals must not be exceeded, as shown by the example below:*
- ◆ *The toothed belt must never be replaced after the 9th service (after more than 90,000 km or 54 months).*
- ◆ *Preventive maintenance always includes the items of the oil change service ⇒ [page 18](#).*
- ◆ *After performing the 18th Service, the sequence must continue by beginning anew, starting with the 1st Service.*
- ◆ *A tolerance is permissible "up to 1,000 km" above or below specified mileage for mileage-related service and "a month" earlier or later than specified for time-related service.*

#### 1st Service

– Perform oil change service ⇒ [page 17](#).

#### 2nd Service

– Perform preventive maintenance ⇒ [page 18](#)

#### 3rd Service

– Perform oil change service ⇒ [page 17](#) continue:

- ◆ **Toothed belt driving camshaft:** Check condition ⇒ [page 72](#).
- ◆ **Poly-V belt (elastic):** Check condition ⇒ [page 53](#).
- ◆ **Air filter:** Replace filter element and clean filter housing ⇒ Engine; Rep. Gr. 24 ; Fuel supply - injection system
- ◆ **Dust and pollen filter:** Replace filter element ⇒ Heating, air conditioning; Rep. Gr. 80 ; Heating.
- ◆ **Rear wheel bearings:** Adjust ⇒ [page 61](#)
- ◆ **Rear brake linings.** Check the thickness ⇒ [page 61](#)

#### 4th Service

– Perform preventive maintenance ⇒ [page 18](#)

#### 5th Service

– Perform oil change service ⇒ [page 17](#).



#### 6th Service

- Perform preventive maintenance ➔ [page 18](#) continue:
- ◆ Toothed belt driving camshaft: Check condition ➔ [page 72](#) .
- ◆ Poly-V belt (elastic): Check condition ➔ [page 53](#) .
- ◆ Poly-V belt: Check condition ➔ [page 53](#) .
- ◆ Power steering: Check oil level ➔ [page 70](#) .
- ◆ Air filter: Replace filter element and clean filter housing ➔ Engine, Rep. Gr. 24 ; Fuel supply - injection system .
- ◆ Dust and pollen filter: Replace filter element ➔ Heating, air conditioning; Rep. Gr. 80 ; Heating .
- ◆ Rear wheel bearings: Adjust ➔ [page 61](#)
- ◆ Rear brake linings: Check the thickness ➔ [page 61](#)
- ◆ Spark plugs: Replace ➔ Engine; Rep. Gr. 28 ; Ignition system .

#### 7th Service

- Perform oil change service ➔ [page 17](#) .

#### 8th Service

- Perform preventive maintenance ➔ [page 18](#)

#### 9th Service

- Perform oil change service ➔ [page 17](#) continue:
- ◆ Toothed belt driving camshaft: Replace ➔ Engine; Rep. Gr. 15 ; Cylinder head, ?Valve gear .
- ◆ Poly-V belt (elastic): Replace ➔ Engine; Rep. Gr. 13 ; Crankshaft, pistons
- ◆ Air filter: Replace filter element and clean filter housing ➔ Engine; Rep. Gr. 24 ; Fuel supply - injection system
- ◆ Dust and pollen filter: Replace filter element ➔ Heating, air conditioning; Rep. Gr. 80 ; Heating .
- ◆ Rear wheel bearings: Adjust ➔ [page 61](#)
- ◆ Rear brake linings: Check the thickness ➔ [page 61](#)

#### 10th Service

- Perform preventive maintenance ➔ [page 18](#)

#### 11th Service

- Perform oil change service ➔ [page 17](#) .



#### 12th Service

- Perform preventive maintenance ➔ [page 18](#)
- ◆ Toothed belt driving camshaft: Check condition ➔ [page 72](#) .
- ◆ Poly-V belt (elastic): Check condition ➔ [page 53](#) .
- ◆ Poly-V belt: Check condition ➔ [page 53](#) .
- ◆ Power steering: Check oil level ➔ [page 70](#) .
- ◆ Air filter: Replace filter element and clean filter housing ➔ Engine; Rep. Gr. 24 ; Fuel supply - injection system .
- ◆ Dust and pollen filter: Replace filter element ➔ Heating, air conditioning; Rep. Gr. 80 ; Heating .
- ◆ Rear wheel bearings: Adjust ➔ [page 61](#)
- ◆ Rear brake linings: Check the thickness ➔ [page 61](#)
- ◆ Spark plugs: Replace ➔ Engine; Rep. Gr. 28 ; Ignition system .

#### 13th Service

- Perform oil change service ➔ [page 17](#)

#### 14th Service

- Perform preventive maintenance ➔ [page 18](#)

#### 15th Service

- Perform oil change service ➔ [page 17](#)
- ◆ Toothed belt driving camshaft: Check condition ➔ [page 72](#) .
- ◆ Poly-V belt (elastic): Check condition ➔ [page 53](#) .
- ◆ Air filter: Replace filter element and clean filter housing ➔ Engine; Rep. Gr. 24 ; Fuel supply - injection system .
- ◆ Dust and pollen filter: Replace filter element ➔ Heating, air conditioning; Rep. Gr. 80 ; Heating .
- ◆ Rear wheel bearings: Adjust ➔ [page 61](#)
- ◆ Rear brake linings: Check the thickness ➔ [page 61](#)

#### 16th Service

- Perform preventive maintenance ➔ [page 18](#)

#### 17th Service

- Perform oil change service ➔ [page 17](#) .



## 18th Service

- Perform preventive maintenance → [page 18](#)
- ◆ Toothed belt driving camshaft: Replace → Engine; Rep. Gr. 15 ; Cylinder head, ?Valve gear .
- ◆ Poly-V belt (elastic): Replace → Engine; Rep. Gr. 13 , Crankshaft, pistons .
- ◆ Poly-V belt: Check condition → [page 53](#) .
- ◆ Air filter: Replace filter element and clean filter housing → Engine; Rep. Gr. 24 ; Fuel supply - injection system .
- ◆ Dust and pollen filter: Replace filter element → Heating, air conditioning; Rep. Gr. 80 ; Heating .
- ◆ Power steering: Check oil level → [page 70](#) .
- ◆ Rear wheel bearings: Adjust → [page 61](#)
- ◆ Rear brake linings: Check the thickness → [page 61](#)
- ◆ Spark plugs: Replace → Engine; Rep. Gr. 28 ; Ignition system .

## 2.6.2 Maintenance plans - (Models 2010 ►)



### WARNING

*Before proceeding with the work, check if vehicle corresponds to 10,000 km/12 months service or 10,000 km/6 months service.*

The services below are to be performed every 10,000 km or 12 months, whichever occurs first, except brake fluid replacement which is to be executed every 2 years → [page 74](#) , the elastic Poly-V belt must be replaced every 4 years, if the vehicle has not yet run for 90,000 km, and the toothed belt must be replaced every 4 years, if the vehicle has not yet run for 90,000 km.



### Note

- ◆ *Inspection and replacement dates specified in service charts must be strictly observed. Specified intervals must not be exceeded, as shown by the example below:*
- ◆ *Preventive maintenance always includes the engine oil change service.*
- ◆ *After performing the 12th Service, the sequence must continue by beginning anew, starting with the 1st Service.*
- ◆ *A tolerance is permissible "up to 1,000 km" above or below specified mileage for mileage-related service and "a month" earlier or later than specified for time-related service.*

## 1st Service

- Perform preventive maintenance → [page 18](#) .





## 2nd Service

- Perform preventive maintenance ➔ [page 18](#) continue:
- ◆ Toothed belt driving camshaft: Check condition ➔ [page 72](#) .
- ◆ Poly-V belt (elastic): Check condition ➔ [page 53](#) .
- ◆ Air filter: Replace filter element and clean filter housing ➔ Engine; Rep. Gr. 24 ; Fuel supply - injection system .
- ◆ Dust and pollen filter: Replace filter element ➔ Heating, air conditioning; Rep. Gr. 80 ; Heating .
- ◆ Rear brake linings: Check the thickness ➔ [page 61](#)

## 3rd Service

- Perform preventive maintenance ➔ [page 18](#)

## 4th Service

- Perform preventive maintenance ➔ [page 18](#) continue:
- ◆ Toothed belt driving camshaft: Check condition ➔ [page 72](#) .
- ◆ Poly-V belt (elastic): Check condition ➔ [page 53](#) .
- ◆ Air filter: Replace filter element and clean filter housing ➔ Engine; Rep. Gr. 24 ; Fuel supply - injection system .
- ◆ Dust and pollen filter: Replace filter element ➔ Heating, air conditioning; Rep. Gr. 80 ; Heating .
- ◆ Rear brake linings: Check the thickness ➔ [page 61](#)
- ◆ Spark plugs: Replace ➔ Engine; Rep. Gr. 28 ; Ignition system .

## 5th Service

- Perform preventive maintenance ➔ [page 18](#) .

## 6th Service

- Perform preventive maintenance ➔ [page 18](#) continue:
- ◆ Toothed belt driving camshaft: Check condition ➔ [page 72](#) .
- ◆ Power steering: Check oil level ➔ [page 70](#) .
- ◆ Poly-V belt (elastic): Check condition ➔ [page 53](#) .
- ◆ Air filter: Replace filter element and clean filter housing ➔ Engine; Rep. Gr. 24 ; Fuel supply - injection system .
- ◆ Dust and pollen filter: Replace filter element ➔ Heating, air conditioning; Rep. Gr. 80 ; Heating .
- ◆ Rear brake linings: Check the thickness ➔ [page 61](#)

## 7th Service

- Perform preventive maintenance ➔ [page 18](#)



#### 8th Service

- Perform preventive maintenance ➔ [page 18](#) continue:
- ◆ Toothed belt driving camshaft: Check condition ➔ [page 72](#) .
- ◆ Poly-V belt (elastic): Check condition ➔ [page 53](#) .
- ◆ Air filter: Replace filter element and clean filter housing ➔ Engine; Rep. Gr. 24 ; Fuel supply - injection system .
- ◆ Dust and pollen filter: Replace filter element ➔ Heating, air conditioning; Rep. Gr. 80 ; Heating .
- ◆ Rear brake linings: Check the thickness ➔ [page 61](#)
- ◆ Spark plugs: Replace ➔ Engine; Rep. Gr. 28 ; Ignition system .

#### 9th Service

- Perform preventive maintenance ➔ [page 18](#)

#### 10th Service

- Perform preventive maintenance ➔ [page 18](#) continue:
- ◆ Toothed belt driving camshaft: Check condition ➔ [page 72](#) .
- ◆ Poly-V belt (elastic): Check condition ➔ [page 53](#) .
- ◆ Air filter: Replace filter element and clean filter housing ➔ Engine; Rep. Gr. 24 ; Fuel supply - injection system .
- ◆ Dust and pollen filter: Replace filter element ➔ Heating, air conditioning; Rep. Gr. 80 ; Heating .
- ◆ Rear brake linings: Check the thickness ➔ [page 61](#)

#### 11th Service

- Perform preventive maintenance ➔ [page 18](#) .

#### 12th Service

- Perform preventive maintenance ➔ [page 18](#) continue:
- ◆ Toothed belt driving camshaft: Check condition ➔ [page 72](#) .
- ◆ Power steering: Check oil level ➔ [page 70](#) .
- ◆ Poly-V belt (elastic): Check condition ➔ [page 53](#) .
- ◆ Air filter: Replace filter element and clean filter housing ➔ Engine; Rep. Gr. 24 ; Fuel supply - injection system .
- ◆ Dust and pollen filter: Replace filter element ➔ Heating, air conditioning; Rep. Gr. 80 ; Heating .
- ◆ Rear brake linings: Check the thickness ➔ [page 61](#)
- ◆ Spark plugs: Replace ➔ Engine; Rep. Gr. 28 ; Ignition system .



### 2.6.3 Maintenance Plan - Oil change Service (2009 and 2010 ▶ Models)

Service according to time or mileage

The oil change service must be performed according to the "Service Charts".



#### Note

*Use oils with high lubrication capacity in accordance with VW specifications 502 00 (gasoline, alcohol, and Total flex).*

A tolerance is permissible "up to 1,000 km" above or below specified mileage for mileage-related service and a month earlier or later than specified for time-related service.

Indications for service performance

The order of each service operation was tested and optimized. They must be maintained in order to avoid unnecessary idle periods during service.

If the battery is disconnected, the automatic window closure function of the power windows is not active. In this case, the function must be re-programmed before vehicle delivery. The battery must not be disconnected after re-programming. Power windows - re-programming.

If faults are detected during oil change service, adopt necessary measures for repair and inform client accordingly.

Ask the client if he wants new windshield wiper blades to be installed and the product assembled Window cleaner -G 052 131 A1- up to 07/2005 and Window cleaner -G 052 184 A2- as from 08/2005 or Anti-freeze protector and cleaner -G 052 164- to be added to the windshield/rear window wiper system.

Application	Additive for windshield/rear window washer	Proportion
Countries with arctic climate	-G 052 164 A1- or -G 052 164 A2-	300 ml of additive to 700 ml of water
Countries with tropical climate	-G 052 184 A2- or -G 052 131 A2-	100 ml of additive to 990 ml of water 50 ml of additive to 850 ml of water

Oil change service	Service
Engine compartment	
– Engine oil: Fill with specified oil.	⇒ <a href="#">page 50</a>
– Brake fluid: Check and adjust to correct level, if necessary.	⇒ <a href="#">page 77</a>
Vehicle on elevator platform	
– Engine oil: Drain or aspirate.	⇒ <a href="#">page 50</a>
– Engine oil drain plug with sealing ring. Replace	⇒ <a href="#">page 50</a>
– Engine oil filter: Replace.	⇒ <a href="#">page 51</a>
– Brake system. Perform visual inspection to detect damage and leakages	⇒ <a href="#">page 55</a>
– Brake pads: Check for wear (except for 1st service).	⇒ <a href="#">page 55</a>
– Brake rotors: Check for wear (except for 1st service).	⇒ <a href="#">page 58</a>
– Fuel filter (Total Flex): Replace.	⇒ <a href="#">page 74</a>
Finalizing tasks	
– Maintenance and guarantee booklet: Register date and mileage for next service	



Oil change service	Service
- Maintenance interval indicator (if available): Reset to 0.	→ <a href="#">page 34</a>
- Service label: Register date for next service (including brake fluid replacement) and fasten label to left side of instrument panel or to left door B column.	→ <a href="#">page 22</a>

## 2.6.4 Maintenance Plan - Preventive Maintenance (2009 and 2010 Models)

Service according to time or mileage

### Inspection intervals

Preventive Maintenance is to be performed according to "Service Charts" and always includes the items of the Oil Change Service.

A tolerance is permissible "up to 1,000 km" above or below specified mileage for mileage-related service and "a month" earlier or later than specified for time-related service.



### Note

- ◆ Inform the client if, within the performance of a service, problems are detected that require repair measures.
- ◆ Use oils with high lubrication capacity in accordance with VW specifications 502 00 (gasoline, alcohol, and Total flex).

### Indications for service performance

The order of each service operation was tested and optimized. They must be maintained in order to avoid unnecessary idle periods during service.

If the battery is disconnected, the automatic window closure function of the power windows is not active. In this case, the function must be re-programmed before vehicle delivery. The battery must not be disconnected after re-programming. Power windows - re-programming.

If faults are detected during preventive maintenance, adopt necessary measures for repair and inform client accordingly.

Ask the client if he wants new windshield wiper blades to be installed and the product assembled Window cleaner -G 052 131 A1- up to 07/2005 and Window cleaner -G 052 184 A2- as from 08/2005 or Anti-freeze protector and cleaner -G 052 164- to be added to the windshield/rear window wiper system.

Application	Additive for windshield/rear window washer	Proportion
Countries with arctic climate	-G 052 164 A1- or -G 052 164 A2-	300 ml of additive to 700 ml of water
Countries with tropical climate	-G 052 184 A2- or -G 052 131 A2-	100 ml of additive to 990 ml of water 50 ml of additive to 850 ml of water

Service for vehicles with "Service according to time or mileage"	Service
Electrics/Passenger Compartment	
- Power window and tilting window systems: Operation.	
- Passenger compartment illumination, cigar lighter, horn, and control lights: Check function.	
- Driver and passenger airbags: Perform visual inspection to detect external damage	→ <a href="#">page 45</a>





Service for vehicles with "Service according to time or mileage"	Service
– Electric rearview mirrors: Check the operation.	
– Rearview mirrors with manual adjustment: Check condition, fastening and free movement	
– Windshield and rear window wipers: Check the operation.	⇒ <a href="#">page 46</a>
– Front lighting: Check function of low beams, high beams, fog lights, direction indicator and warning lights system.	
– Rear lighting: Check function of brake lights (including the third brake light), tail-lights, back-up lights, fog-lights, license plate illumination, luggage compartment illumination, direction indicator and warning lights.	
– Self-diagnosis: Check the fault memory of all systems with Diagnosis, Measurement and Information System -VAS 5051A/52- .	⇒ <a href="#">page 23</a>
<b>Vehicle outside</b>	
– Windshield and rear window wiper blades: Check resting position and adjust, if necessary; for wiper blades not working properly: correct wiping angle.	⇒ <a href="#">page 47</a>
– Body and paint: Check for damage.	
<b>Tires and wheels</b>	
– Spare wheel tire: Check rolling surface and tire side conditions, and tread depth	⇒ <a href="#">page 48</a>
– Left front wheel tire: Check rolling surface and tire side conditions, and tread depth	⇒ <a href="#">page 48</a>
– Left rear wheel tire: Check rolling surface and tire side conditions, and tread depth	⇒ <a href="#">page 48</a>
– Right rear wheel tire: Check rolling surface and tire side conditions, and tread depth	⇒ <a href="#">page 48</a>
– Right rear wheel tire: Check rolling surface and tire side conditions, and tread depth	⇒ <a href="#">page 48</a>
– Air pressure of 4 tires and spare wheel: Check.	⇒ <a href="#">page 48</a>
<b>Lower part of the vehicle</b>	
– Engine oil: Drain or aspirate.	⇒ <a href="#">page 50</a>
– Engine oil drain plug with sealing ring: Replace	⇒ <a href="#">page 50</a>
– Engine oil filter: Replace.	⇒ <a href="#">page 51</a>
– Fuel filter (Total Flex): Replace.	⇒ <a href="#">page 74</a>
– Engine and components in engine compartment (lower section): Perform a visual inspection to detect any leakages or damage.	⇒ <a href="#">page 53</a>
– Transmission: Check for damage or leakages, including universal joint bellows condition.	
– Manual gearbox: Check oil level.	⇒ <a href="#">page 54</a>
– Brake system: Perform visual inspection to detect damage and leakages.	⇒ <a href="#">page 55</a>
– Brake pads: Check thickness (except for 1st service).	⇒ <a href="#">page 55</a>
– Rear wheel bearings: Adjust ◆ For 10,000 km or 12 months plan only.	⇒ <a href="#">page 61</a>
– Brake rotors: Check thickness (except for 1st service).	⇒ <a href="#">page 58</a>
– Shock absorbers: Check fastening and check for leakages.	
– Underfloor protection: Perform visual inspection to detect damage	⇒ <a href="#">page 61</a>
– Steering bars: Check articulation clearance, fastening, and condition of protection cauls	⇒ <a href="#">page 61</a>
– Front suspension arm articulations: Perform a visual inspection of fastening, clearance as well as leakage and damage to sealing cauls.	⇒ <a href="#">page 64</a>
– Exhaust system: Perform a visual inspection to detect any leakages or damage.	
<b>Engine compartment</b>	





Service for vehicles with "Service according to time or mileage"	Service
- Engine oil: Fill with specified oil.	⇒ <a href="#">page 50</a>
- Engine and components in engine compartment (upper section): Perform visual inspection to detect damage and leakages.	⇒ <a href="#">page 53</a>
- Poly-V belt and elastic: Check condition.	⇒ <a href="#">page 53</a>
- Windshield/rear window washer. Adjust water jet from nozzles and adjust fluid and additive in reservoir to correct level.	⇒ <a href="#">page 46</a>
- Engine coolant: Correct anti-freeze proportion and adjust level.	⇒ <a href="#">page 64</a>
- Brake fluid: Adjust to correct level (depending on brake pad wear).	⇒ <a href="#">page 77</a>
- Headlights: Adjust beams	⇒ <a href="#">page 78</a>
Finalizing tasks	
- Maintenance interval indicator (if available): Reset to 0.	⇒ <a href="#">page 34</a>
- Maintenance and guarantee booklet: Register date and mileage for next service.	
- Service label: Register date for next service (including brake fluid replacement) and fasten label to left side of instrument panel or to left door B column.	⇒ <a href="#">page 22</a>
- Perform test cycle.	⇒ <a href="#">page 79</a>



## 3 General aspects

### 3.1 Lifting vehicle by elevator or workshop jack

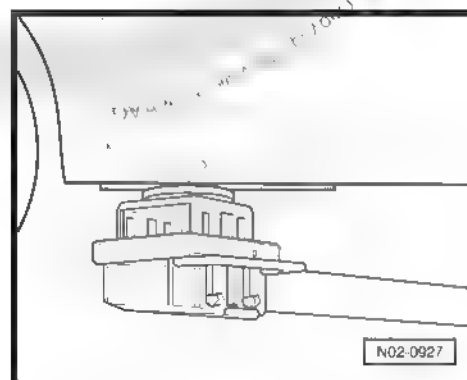


#### WARNING

- ◆ *Before positioning the vehicle on an elevator, make sure there is sufficient clearance between elevator and lower vehicle body parts.*
- ◆ *To prevent damage to the vehicle floor and to keep the vehicle from turning over, it may only be lifted by the resting points shown in the illustrations.*
- ◆ *Never start the engine and engage any gear of a lifted vehicle, even if only one driven wheel touches the ground. If these instructions are not obeyed, there is risk of accidents!*
- ◆ *If it becomes necessary to work under the vehicle, it must rest on adequate stands.*
- ◆ *Before placing the vehicle on an elevator, check if vehicle weight exceeds authorized elevator cargo capacity.*
- ◆ *To avoid damage, a suitable wood or rubber support should be used.*
- ◆ *The vehicle must not, under any circumstances, be lifted by its oil sump, transmission or by its front or rear axles.*
- ◆ *The vehicle must not be lifted by the vertical reinforcement to the longitudinal beam.*

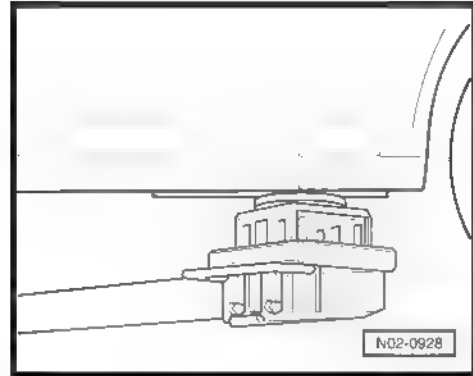
#### 3.1.1 Lifting points for elevator or workshop jack

Front end: At longitudinal reinforcement of central beam.





Rear end: At reinforcement of flange welded to lower longitudinal beam.

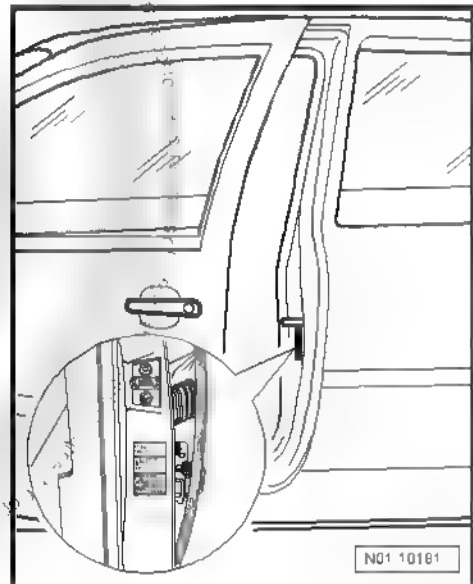


## 3.2 Service label

### 3.2.1 Glue the label "Next service" (during delivery inspection):

- Register date for next service on the service label (including brake fluid replacement) and fasten label to left side of instrument panel or to left door B column.

The tag or label may also be placed at the lower left corner of the windshield (from inside), with its "FACE" visible from outside the vehicle (see instructions in the Service Organization Manual).



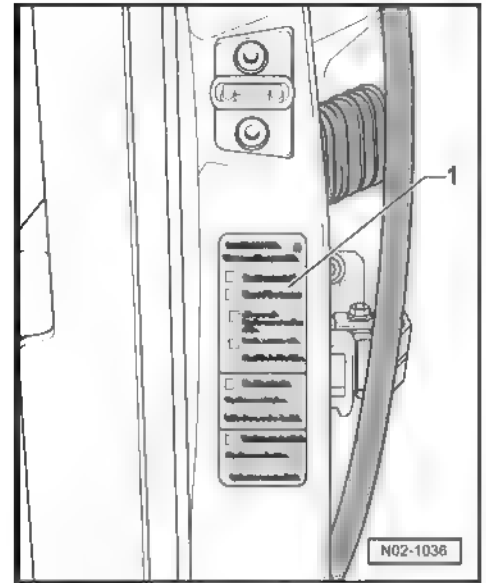
### 3.2.2 Glue the label "Next service" (when performing Oil Change Service or Inspection Service):

- On the service label "Next service": Mark Oil Change Service or Inspection Service (whichever occurs first) and record date and mileage.



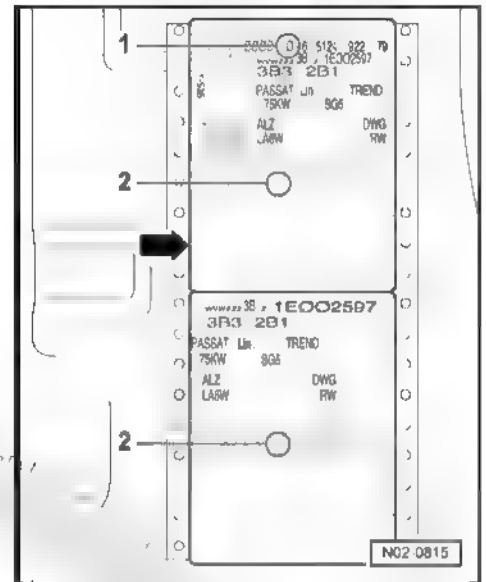
- Glue label to left side of instrument panel or to driver side B column

The tag or label may also be placed at the lower left corner of the windshield (from inside), with its "FACE" visible from outside the vehicle (see instructions in the Service Organization Manual).



### 3.2.3 Glue the "data carrier" of the client's maintenance plan (during delivery inspection):

- Please glue the upper data carrier of the two -arrow-.
- 1 - Planning week.  
2 - PR number.



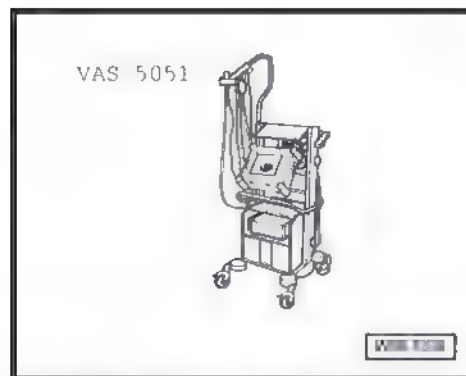
## 3.3 Self-diagnosis - Check fault memories for all systems

### 3.3.1 Check fault memories of all systems with Diagnosis, Measurement and Information System -VAS 5051A/52-

Special tools and workshop equipment required



- ◆ Diagnosis, Measurement and Information System -VAS 5051A/52-



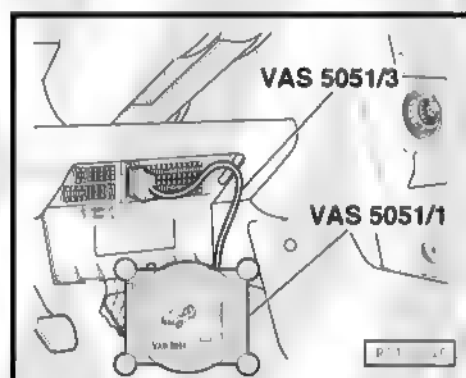
- ◆ Diagnostic cable -VAS 5051/3- or -VAS 5051/6-

### 3.3.2 Connect the Diagnosis, Measurement and Information System -VAS 5051A/52-

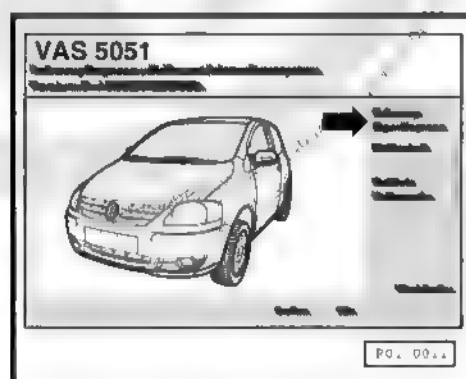
- Operate the parking brake.
- Manual gearbox: Selector lever in the Neutral position.

Connect the Diagnosis, Measurement and Information System -VAS 5051A/52- with Diagnostic cable -VAS 5051/3- or -VAS 5051/6- with the ignition off as follows:

- Turn the ignition on.



Indication on display:



### 3.3.3 Select operation type:

- On the display, press the key for "Vehicle self-diagnosis" -arrow-



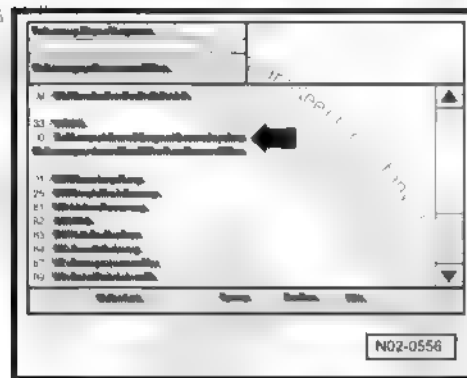
Note

*If the indicated messages with the operation sequence do not appear on the display: ➔ Vehicle diagnosis, testing and information system VAS 5051.*





Indication on display:



### 3.3.4 Select the vehicle system:

- On the display, press "Whole system" -arrow-.
- The Diagnosis, Measurement and Information System -VAS 5051A/52- will send a sequence of all known key words.

If a control unit answers by giving its identification, the display will show the number of faults or "No faults detected".

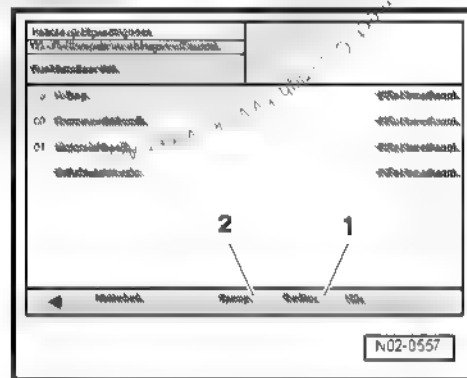
Faults eventually stored for a system will be listed. After that, the Diagnosis, Measurement and Information System -VAS 5051A/52- will send the next key word.

The automatic testing procedure is finalized as soon as the following indication appears on the display:

- On the display, press the key for "Print" -1- and on the printing menu the "Screen".

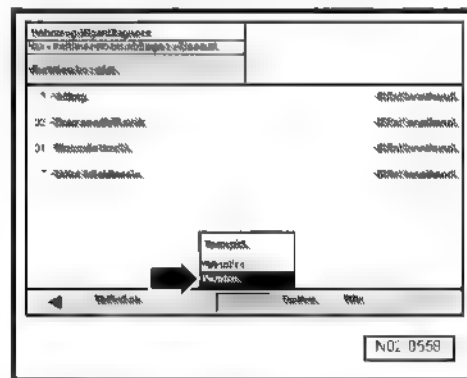
The Diagnosis, Measurement and Information System -VAS 5051A/52- prints all faults or "0 detected fault(s)". If there are stored faults, repair measures are required. The fault protocol is to be sent together for repairs.

- On the display, press the key for "Skip" -2-.



Indication on display:

- On the display, press the key for "Finalize" -arrow-.
- Press the "Finalize" on the finalizing menu.
- Switch off the ignition and disconnect the diagnosis connector.

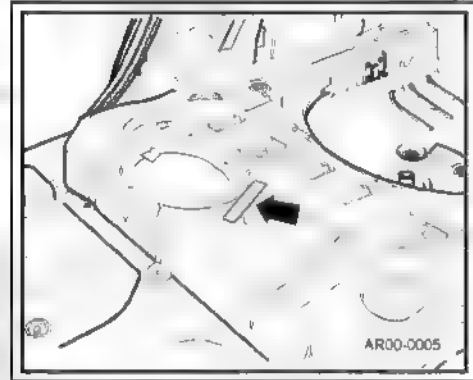




## 3.4 Vehicle identification data

### 3.4.1 Vehicle identification number "VIN" - localization

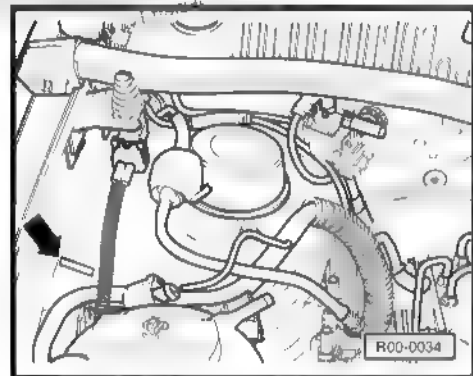
The vehicle identification number (chassis number) -arrow- is engraved on the metal floor below the rear seat next to the access lid to the fuel pump.



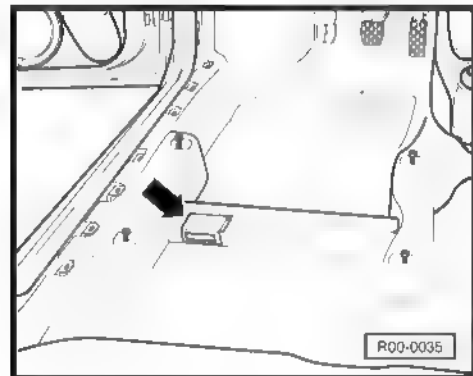
### 3.4.2 VIS label - localization

Destructible label with partial chassis number (VIS)

The first VIS label -arrow- is located on the right hand suspension housing.

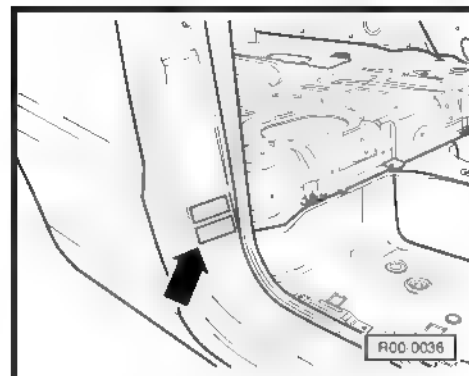


The second VIS label -arrow- is on the left hand seat crossmember, and it is visible from behind through an opening in the floor lining.





The third VIS label -arrow- is on the right B pillar between the doors. It becomes visible by opening the right hand front door.

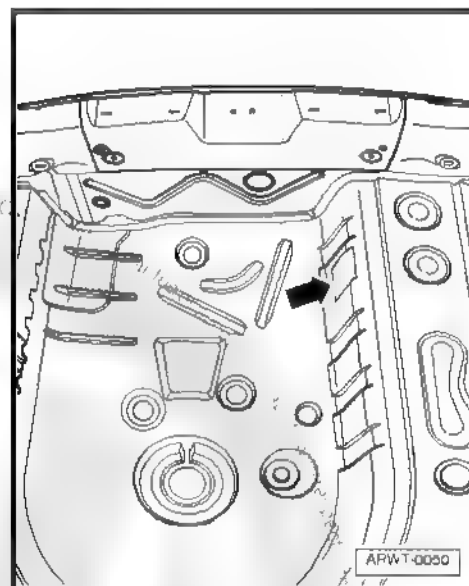


### 3.4.3 Identification plate

See body manual => Body Repairs; Rep. Gr. 00 ; Technical data .

### 3.4.4 Vehicle identification label - localization

The vehicle identification label -arrow- is in the rear section, inside the spare wheel housing, left hand side.



### 3.4.5 Vehicle identification number interpretation:

8AW	CA0	5z	9	4	T	000 001
Trade mark of manufac- turer	Digit supplementa- ry	Type	Digit supplementa- ry	Model-year 2004	Production sites	Number sequential

## 3.5 Service intervals

### 3.5.1 (The PR number is QG0)



Note

Use oils with high lubrication capacity in accordance with VW specifications 502 00 (gasoline, alcohol, and Total flex)



#### Indications for service performance:

- Individual service position order is tried and streamlined. It should be observed in order to avoid unnecessary work interruptions.
- If, in the course of the Inspection Service, faults are detected that require repairs, the client must be informed accordingly.

Intervals	Service
<ul style="list-style-type: none"> <li>– Oil change service according to service interval indicator</li> <li>◆ every 10,000 km or every 6 months, whichever occurs first</li> <li>◆ 2005 ➤ 2008</li> </ul>	⇒ <a href="#">page 6</a>
<ul style="list-style-type: none"> <li>– Oil change service according to service interval indicator</li> <li>◆ every 10,000 km or every 6 months, whichever occurs first</li> <li>◆ 2009 and 2010</li> </ul>	⇒ <a href="#">page 17</a>
<ul style="list-style-type: none"> <li>– Oil change service according to service interval indicator</li> <li>◆ every 10,000 km or every 12 months, whichever occurs first (included in preventive maintenance)</li> <li>◆ 2010 ➤</li> </ul>	⇒ <a href="#">page 17</a>
<ul style="list-style-type: none"> <li>– Inspection service according to service interval indicator</li> <li>◆ every 12 months, every 30,000 km and every 60,000 km.</li> <li>◆ 2008</li> </ul>	⇒ <a href="#">page 8</a>
<ul style="list-style-type: none"> <li>– Preventive maintenance according to service interval indicator</li> <li>◆ every 20,000 km or every 12 months, whichever occurs first</li> <li>◆ 2009 ➤ and 2010</li> </ul>	⇒ <a href="#">page 18</a>
<ul style="list-style-type: none"> <li>– Preventive maintenance according to service interval indicator</li> <li>◆ every 10,000 km or every 12 months, whichever occurs first</li> <li>◆ 2010 ➤</li> </ul>	⇒ <a href="#">page 18</a>
<ul style="list-style-type: none"> <li>– Brake fluid replacement every 2 years (24 months).</li> </ul>	⇒ <a href="#">page 74</a>

## 3.6 Engine oils

### 3.6.1 Approved norms for engine oils for gasoline and Total flex engines

Engines with identification letters: BAH, BLH, BPA, CCRA, and CFZA

Vehicles with PR number (QG0)	
Gasoline and Total flex engines	VW norms
4 cyl.	VW 502 00



### 3.6.2 Approved norms for Diesel engine oil

Engines with identification letters: ASY

Diesel engines	VW norms
4 cyl.	VW 505 00 or VW 505 01

### 3.6.3 Engine oil properties

Multi-purpose oils according to VW norms 502 00:

- ◆ Is indicated for use in adverse operating conditions, such as bad roads, maximum cargo, towing operations, frequent operation in mountainous regions and in hot climate.



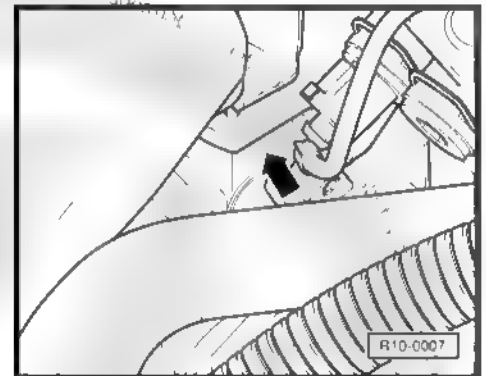
**WARNING**

- ◆ *Observe disposal regulations!*

## 3.7 Identification letters and engine number

### 3.7.1 Engines: BAH, BLH, BPA, CCRA, and CFZA

Engine identification letters and engine number are engraved on the engine block below the thermostat valve housing. In addition, on the upper mechanical distribution cover there is an adhesive label bearing engine identification letters and serial number. The engine identification letters are also indicated on the vehicle identification label.



### 3.7.2 Engine: ASY

The engine number consists of up to nine characters (alpha-numerical). The first part (no more than 3 identification letters) represents the "engine identification letters", the second part (6 characters) is the "serial number". If more than 999,999 engines with the same identification characters are produced, the first of the six characters is replaced by a letter.

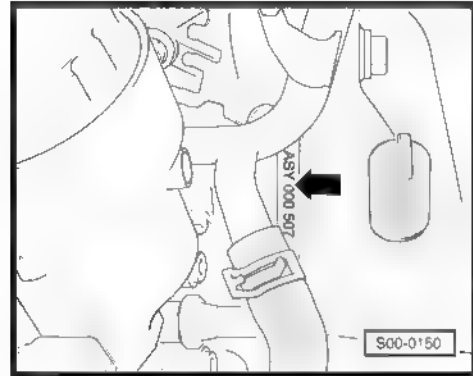




The engine number ("identification letters" and "serial number") are on the engine block, in the engine/transmission separation area.

Additionally, on the mechanical distribution cover there is a sticker -arrow- showing "the engine identification letters" and "serial number".

Engine identification characters are also indicated on the vehicle data plate



### 3.8 Engine start assistance (pushing the vehicle to start the engine)/towing

Engine start help and towing occur in different ways according to different laws in different countries.

If the vehicle is equipped with a towing hook, the towing cable or tow-bar must be connected by means of the front or rear hook.



#### Note

- ◆ *The towing cable should be elastic in order to protect both vehicles. For this reason shall only synthetic ropes or of similar elastic material be used. The safest means of towing is still the tow-bar!*
- ◆ *First of all, attention should be paid to ensure that no unwanted traction forces and no load impacts occur. In towing operations on unpaved roads, there is always the risk of overloading and damaging the towing fixtures.*
- ◆ *Before pushing the vehicle to start the engine, it is preferable to use an auxiliary battery to help start the engine.*

If a vehicle is to receive engine start help or if it is to be towed, attention should be paid to the following:



#### WARNING

*Vehicles with automatic transmission must NEVER be submitted to forced engine start procedures.*

It is recommended that vehicles never be pushed in forced engine start attempts. Instead, auxiliary cables should be used to start the engine.

- ◆ Legal vehicle towing regulations must be obeyed.
- ◆ Both drivers should be experienced in towing operations. Inexperienced drivers should not attempt a forced engine start, or to tow a vehicle
- ◆ When using a towing cable, the driver of the towed vehicle must release the clutch gently during initial movement and gear changes
- ◆ The driver of the towed vehicle must always keep the towing cable stretched tight.
- ◆ Both vehicles must use warning lights, and other relevant regulations, if any, must also be obeyed



- ◆ The ignition must be switched on to avoid locking the steering wheel and to ensure that warning lights, horn, windshield wipers and washers are ready to function.
- ◆ Since the power brakes only work with the engine running, much more force must be applied to the brake pedal when the engine is at standstill.
- ◆ Since the power steering does not work if the engine is not running, steering requires much extra effort with the engine at standstill.
- ◆ If the automatic transmission is not lubricated, the vehicle may only be towed with the traction wheels lifted from the ground.

### 3.8.1 In case the engine start assistance has to proceed against our recommendation, the following instructions must be followed even for vehicles with manual transmission:



#### WARNING

*Vehicles with automatic transmission must NEVER be submitted to forced engine start procedures.*

- Before starting the forced engine start procedure, press the clutch pedal and engage 2nd or 3rd gear wheel.
- Turn the ignition on.
- Both vehicles must be moving before the clutch pedal may be released.
- As soon as the engine starts, press the clutch pedal and shift to neutral to avoid colliding with the towing vehicle in front.



#### Note

*Vehicles equipped with a catalyzer must not be pushed to start the engine over a distance of more than 50 m, if the catalyzer is hot. Unburnt fuel may enter the catalyzer and damage it.*

For longer distances, the front end of the vehicle must be lifted.

The vehicle may be towed by tow-track only with its front wheels lifted from the ground.

Reason: With the vehicle lifted by its rear wheels, the drive shafts will rotate backwards. This will cause the planetary gears to rotate at high speeds that would seriously damage the transmission after only a short time.



## 4 Service descriptions

### 4.1 Clock - Adjust (up to the model 2010)

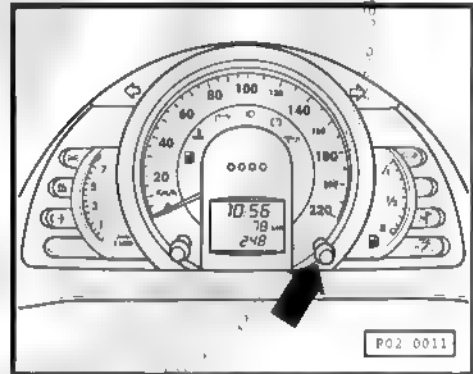
Perform adjustment as follows:

Adjust hours (display with 2 lines):

- With the ignition on, select clock function pressing the button -arrow- for less than 2 seconds. A clock symbol will appear next to the hours.
- To activate the time setting function, keep the button -arrow- pressed until the dial starts flashing, then briefly press the button -arrow-, the numbers will ascend in sequence.

Adjust minutes:

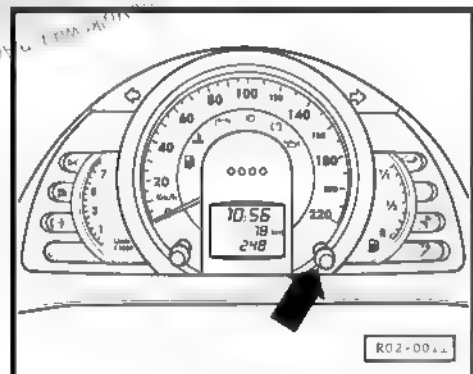
- To activate the minute adjustment function, keep the button -arrow- pressed until the dial starts flashing, then briefly press the button -arrow-, the numbers will ascend in sequence.



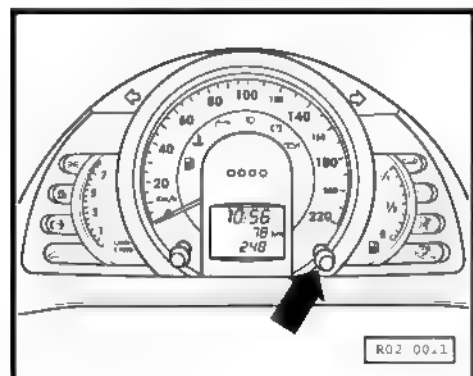
- Press the button for more than 2 seconds -arrow- to return to the trip mileage recorder function.

Adjust hours (display with 3 lines):

- A clock symbol will appear next to the hours.



- To adjust the hours, turn the button, with the ignition on and radio information on the display, -arrow- briefly counter-clockwise. To adjust minutes, turn the button -arrow- clockwise.
- A slight turn to the stop will only change one unit each time. If the button is turned, keeping it pressed, the numbers will ascend in sequence.
- To adjust the minute precisely, based on another clock, move the button -arrow- to the exact minute minus one. At the precise moment the correct clock completes the full minute, turn the button again to the right.



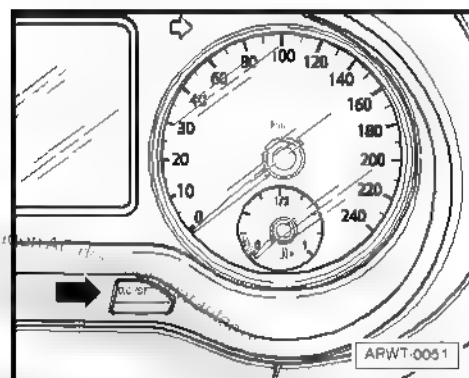
### 4.2 Clock 2- adjust (as from model-year 2011)

Perform adjustment as follows:



#### Adjust hours:

- Press the **0.0/SET** -arrow-.

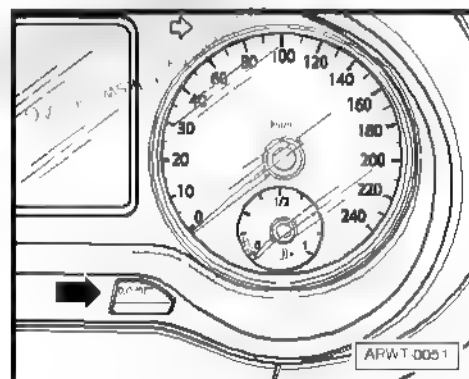


- Keep **0.0/SET** pressed for a few moments until the hour indication starts to flash. Then press **0.0/SET** several times until the desired number appears.

#### Adjust minutes:

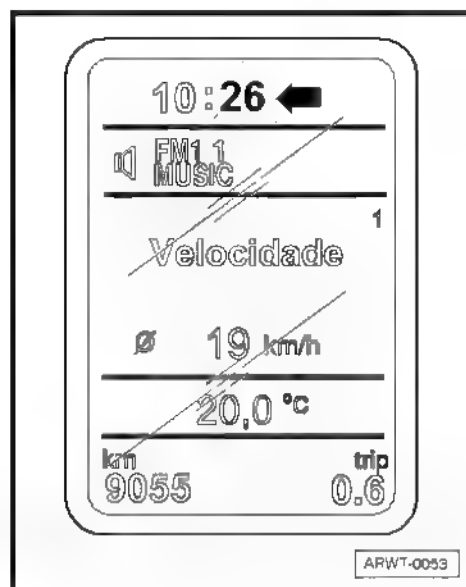


- Press the **0.0/SET** -arrow- and the hour indication will start to flash, then press again the button **0.0/SET** to select minute indication.





- Keep **0.0/SET** pressed for a few moments until the minute indication starts to flash. Then press **0.0/SET** several times until the desired number appears.



#### 4.3 Maintenance interval indicator (if available): Reset to zero with the Diagnosis, Measurement and Information System - VAS 5051A/52-

- ♦ with Diagnosis, Measurement and Information System -VAS 5051A/52-

##### 4.3.1 Reset the service interval indicator to zero by means of the reset button for the trip mileage recorder (up to model-year 2010)

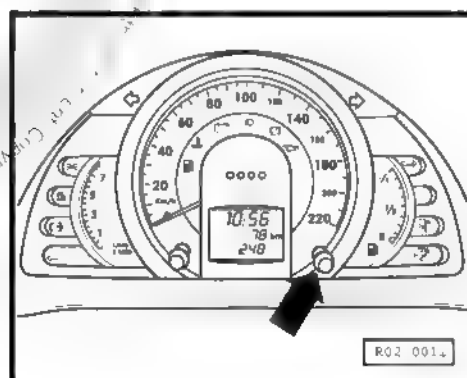
The service interval indicator must

- ♦ be reset to zero on delivery inspection, each oil change service and each inspection service!

Reset the indicator to zero as follows:

- Turn the ignition off.
- Press and keep pressed the button -arrow- next to the speedometer.
- Turn the ignition on.
- Keep the button on the right side of the speedometer pressed for approximately 10 seconds.

The display returns to normal indication.



##### 4.3.2 Reset to zero the service interval indicator by means of the button **0.0/SET** (as from model-year 2011)

The service interval indicator must

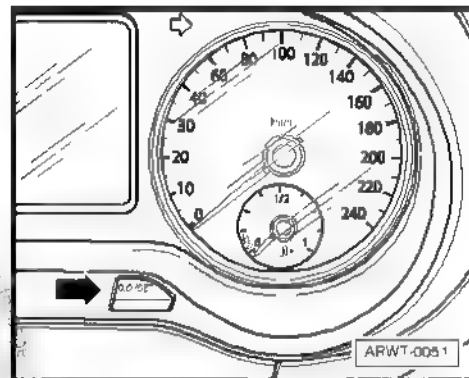




- ◆ be reset to zero on delivery inspection, each oil change service and each inspection service!

Reset the indicator to zero as follows

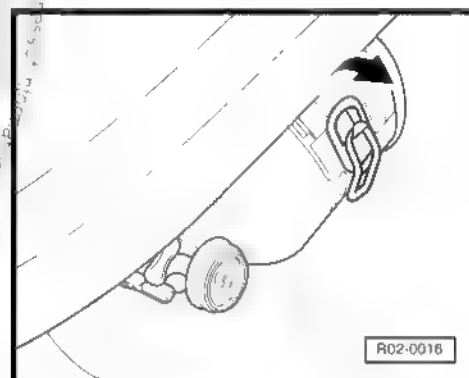
- Turn the ignition off.
- Press the **0.0/SET** -arrow- and, keeping it pressed, turn the ignition on
- Keep **0.0/SET** pressed for approximately 10 seconds. The display returns to normal indication



#### 4.4 Fire extinguisher - Check fastening and charge (remove plastic protection)

Location: fastened to a support in the front lower section of the passenger seat.

The pressure indicator needle must be in the green segment -2-, check the pressure indicator dial:

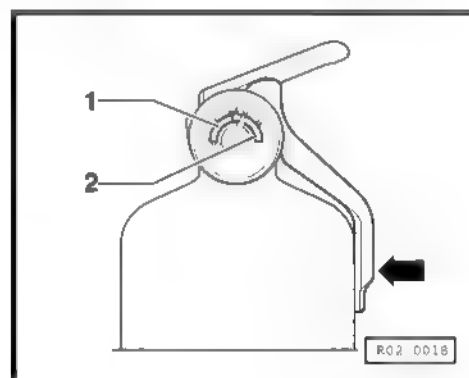


- ◆ Green segment -2- = extinguisher charged.
- ◆ Red segment -1- = extinguisher discharged.
- ◆ Anti-tamper seal -arrow-.



#### Note

- ◆ Check for possible oxidation and check component fastening.
- ◆ The extinguisher on the vehicle is intended for one utilization only, and its validity period is regulated by law!
- ◆ Validity date verification printed on extinguisher cylinder.
- ◆ The anti-tamper seal -arrow- guarantees that the extinguisher has not been used
- ◆ Whenever used, the extinguisher must be reconditioned without delay
- ◆ The vehicle is not allowed to operate with a fire extinguisher not in working condition or with its validity period expired





## 4.5 Power windows - Re-programming



### Note

*After disconnecting and connecting the vehicle battery, the electric opening and closing function of the power windows is not active. Power window actuation must be re-programmed before vehicle delivery. The battery must not be disconnected after re-programming.*

Complete the following work stages to initiate the electric window actuation

- Press the key to fully close the window, keeping the key pressed for another few seconds.
- Repeat the operation at the remaining doors.

## 4.6 Radio - activate anti-theft code

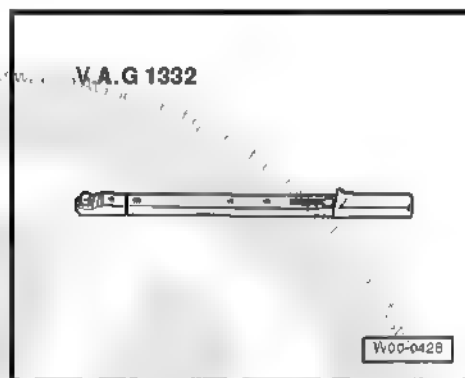
Radio receivers are supplied with a fixed code. This fixed code is not factory-activated.

Safety codification for the finished receiver will only be activated specifying the fixed code. The fixed code must be activated by consulting ⇒ Rep. Gr. 91 ; Communication .

## 4.7 Wheel fastening screws - Apply torque

Special tools and workshop equipment required

- ♦ Torquemeter - 40 to 200 Nm (socket 1/2") -VAG 1332-



### 4.7.1 Hubcap/Super Hubcap

The hook for hubcap and super hubcap removal is in the vehicle tool kit.

### 4.7.2 Wheel screws



### Note

*Take care to tighten the wheel fastening screws crosswise to the following tightening torque:*

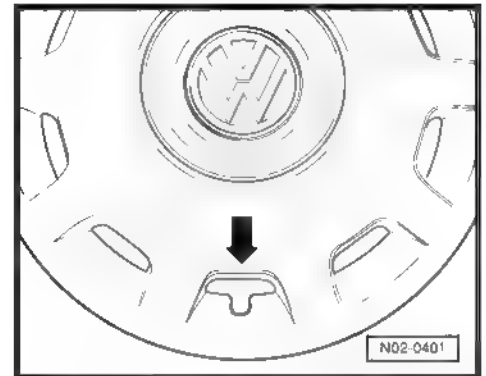
Tightening torque: 120 Nm

- After finalizing the work, return the hubcap/super hubcap removal hook to the tool kit of the vehicle



### 4.7.3 Installation of the super hub cap (if available)

- Install the super hubcap in a way to position the tire valve in the gap provided -arrow-.



## 4.8 Battery - Check terminals to ensure proper seating and fastening

### 4.8.1 Battery - check fastening



#### Note

*Due to production reasons, different types of battery are installed. Specific derivations and working instructions must be checked for each type of battery => Electrical system; Rep. Gr. 27 ; Starter, generator, battery .*

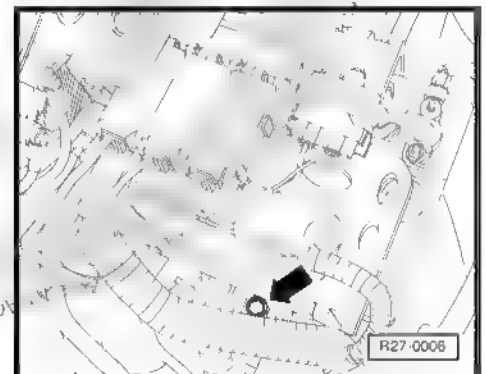
#### Visual checking

Perform the following work sequence:

- Check battery housing for damage. Battery housing damage may cause electrolyte leakage.
- Check battery terminals (battery cable connections) for damage. Damaged battery terminals will affect contact to connection cables. This may cause fire, and electrical system failures may occur.
- Check battery fastening -arrow- and apply 25 Nm of torque to the fastening screw, if necessary.

If the battery fastening is not firm, the following may result:

- Battery durability may be reduced due to vibration.
- Damage to battery housing.
- Safety problems in case of collision.



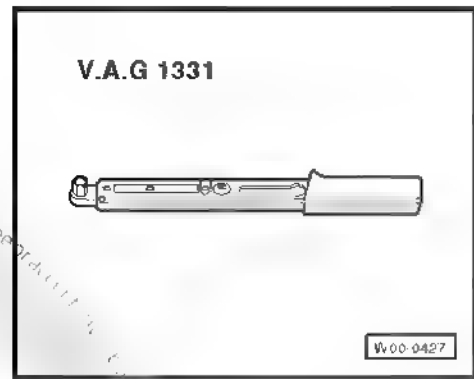
### 4.8.2 Battery terminal seating

Correctly seated battery terminals ensure perfect electrical system operation and long battery life.

Special tools and workshop equipment required

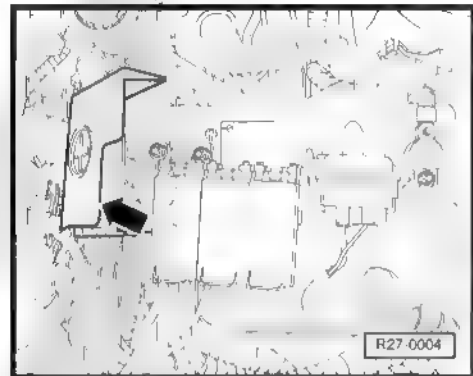



- ◆ Torque wrench - 5 to 50 Nm (socket 1/2") -VAG 1331-



Perform the following work sequence:

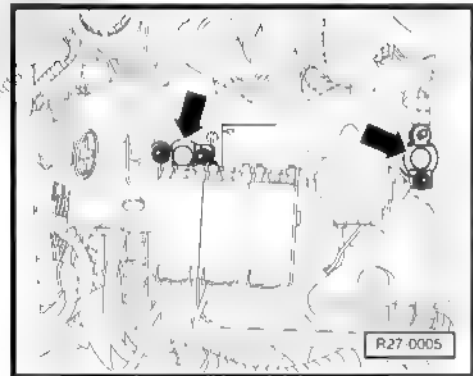
- Compress the locks and tilt the positive battery terminal cover -arrow-.
- With alternate movements of positive and negative battery cables, check if terminals -arrows- are firmly fastened to battery poles.



**WARNING**

*If the terminal is not firmly attached to the battery pole, first disconnect the terminal from the negative pole of the battery to prevent risk of accident.*

If the terminal is not firmly attached to the positive pole of the battery:



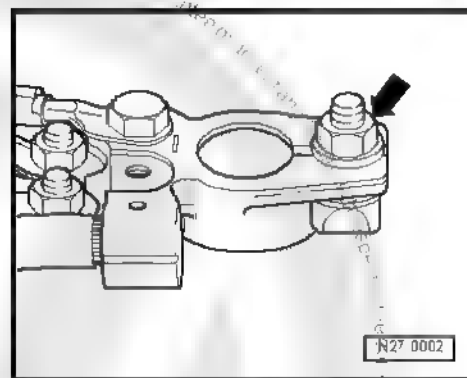


- Apply 5 Nm of torque to the screws of the terminals connected to the battery -arrow-.



#### Note

- ◆ Tightening torque for auxiliary battery terminals is 6 Nm
- ◆ Battery poles must not be lubricated.
- ◆ The terminals on the battery poles may only be connected by hand, without excessive force to avoid damage to the battery housing.
- ◆ When reconnecting the battery, a check of vehicle equipment must be performed (radio, clock, comfort systems electrics, power windows, etc.) in accordance with the instruction/repair manual.
- ◆ Before performing any measurements, a visual inspection of the external conditions of the battery connections must be made without fail.



#### WARNING

Warning notes and safety regulations for lead and acid batteries must be observed. These are indicated by symbols on the battery label.

#### Warning notes and safety regulations for lead and acid batteries

1 - It is prohibited to produce fire, sparks, open flames and to smoke:

- Avoid causing sparks and electrostatic discharges when handling electric devices and cables;
- Avoid short circuits (never lay tools over a battery).

2 - Wear protective goggles.

3 - Keep children away from acid and batteries.

4 - Recycling:

- Dispose old batteries at a battery collection center (supplier).

5 - Never dispose of a spent battery with domestic waste!

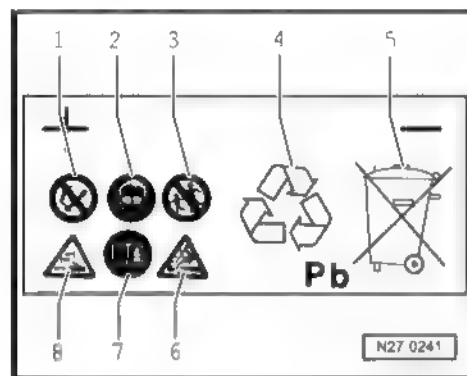
6 - Explosion risk:

- A highly explosive oxydric gas mixture is produced while charging batteries.

7 - Consider all information given on the battery, in the repair manual for electrical systems, and the operation manual

8 - Chemical corrosion hazard.

- Battery acid is highly corrosive, wear gloves and eye protection;
- Never tilt the battery. Acid may leak from the gas escape openings.







## 4.9 Battery - Check charge capacity



### Note

*The vehicle must have been switched off for at least 2 hours.*

### 4.9.1 Check by means of the charge indicator "magic eye" during delivery inspection

Perform visual inspection of charge indicator "magic eye" -arrow-.

The charge indicator "magic eye" gives information on battery charge condition.



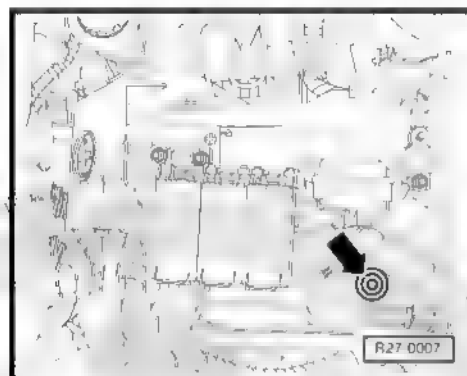
### Note

- ◆ *Since the observation hole is located in a single battery cell, the indication refers to this cell. A thorough evaluation of battery conditions is possible only by means of a recharge capacity test for the battery ⇒ [page 40](#).*
- ◆ *Air bubbles can be formed under the observation hole when the battery was recharged or was charged whilst driving. They corrupt the color indication on the observation hole.*
- ◆ *The observation hole can be positioned at different points of the battery.*
- Before the visual inspection, lightly and carefully tap the charge indicator viewer with the handle of a screwdriver -arrow- to keep the air bubbles from interfering with the indication.

By this, any air bubbles that may distort the indicator reading are eliminated by dilution.

The color indication of the "magic eye" will thus be more precise. Three different indications are possible:

- Green → Battery charge is sufficient.
- Black → Insufficient charge or none at all, battery has to be recharged (repair measure). For battery recharging procedures ⇒ Electrical system; Rep. Gr. 27 ; Starter, generator, battery .
- Colorless or yellow → battery must be replaced (repair measure).



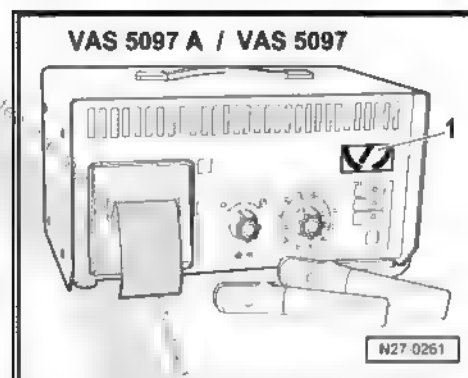
### 4.9.2 Battery charge capacity test

Special tools and workshop equipment required

- ◆ Battery tester with printer -VAS 5097A- or



- ◆ -VAS 5097- Battery tester with printer, converted (modification software recognizable by logo 1)



#### Note

*When using Battery tester with printer -VAS 5097A- or -VAS 5097- battery removal is not necessary. The battery also does not have to be disconnected.*

Perform battery discharge (load) test:

- Turn the ignition off.
- Connect the clamps to the battery poles. ⇒ See operating instructions for the battery test equipment.

Clamps must have adequate contact with battery poles.

- Recharging current differs and has to be adjusted to battery charge capacity, at the test equipment. ⇒ Operating instructions for battery test equipment.



- Perform battery charge test according to instructions for use of the battery test equipment and compare the printed test result -arrow- with the following chart.

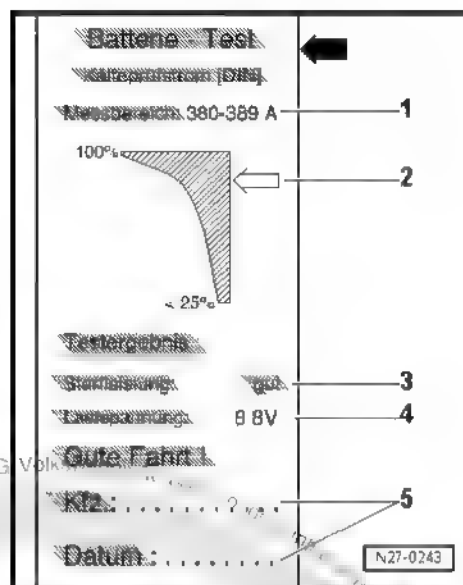
Explanations for test printing:

- 1 - Measurement area adjusted on the test equipment.
- 2 - Diagram (arrow indicates battery condition).
- 3 - Test result
- 4 - Voltage present in the battery during charge essay.
- 5 - Vehicle data and date (to be filled in by person conducting the test).



Note

Printing the test is necessary to fill in the guarantee.



Battery test equipment print	Measures to be taken
Starting power is very good	Battery is OK
Starting power is good	Battery is OK
Insufficient starting power	Recharge battery <sup>6)</sup>
Starting power is poor	Recharge battery <sup>6)</sup>
Starting power is very poor	Recharge battery <sup>6)</sup>
Not fit for tests	Recharge battery <sup>6)</sup>

6) After recharging the battery, the battery charge test must again be performed. If, after recharging, the following indications appear "insufficient startup power, deficient startup power, very deficient startup power or not apt for testing", the battery must then be replaced

Explanations for battery charge test:

During this test, battery tension is reduced by excessive load (high current flow).

If the battery is OK, the tension value is reduced to minimum tension.

If the battery is damaged or poorly charged, battery tension will fall quickly below minimum tension.

After the test this low tension value will continue for some time; tension will rise slowly.

For battery recharging procedures ⇒ Electrical system; Rep Gr. 27 ; Starter, generator, battery .

#### 4.10 Engine oil level - Check and adjust, if necessary

Pay attention to the following:

After stopping the engine, it is necessary to wait for at least 3 minutes to allow the engine oil to return to the oil pan.

- Pull the dipstick out and clean it with a clean cloth and fully insert it again (to the stop).



- Pull the dipstick out again and check the oil level for the following conditions:

#### Condition 1

- Area -nd- Minimum indication area. Oil must be replenished. It is sufficient for the oil level to be at some point in area -b-.
- Area -b- Oil does not need to be replenished.
- Area -c- Maximum indication area. Oil must not be replenished.



#### Note

- ◆ With oil level above area -c- there is danger of damaging the catalyzer
- ◆ Oil level must always be between minimum and maximum marks. Make sure that the oil level does not exceed the maximum mark.

- Pull the dipstick out to check the oil level again.

#### Condition 2

- Area -A- Oil must not be replenished.
- Area -B- Oil does not need to be replenished.
- Area -C- Oil must be replenished. It is sufficient for the oil level to be at some point in area -B-.
- Arrow -1- Maximum mark
- Arrow -2- Minimum mark

- Pull the dipstick out to check the oil level again.

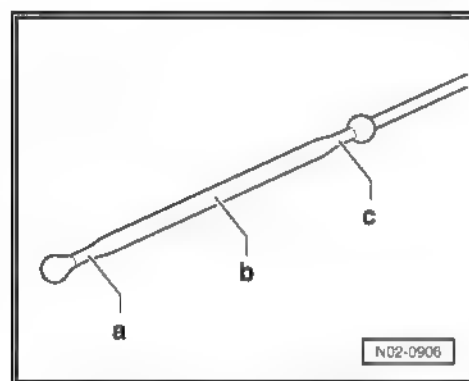
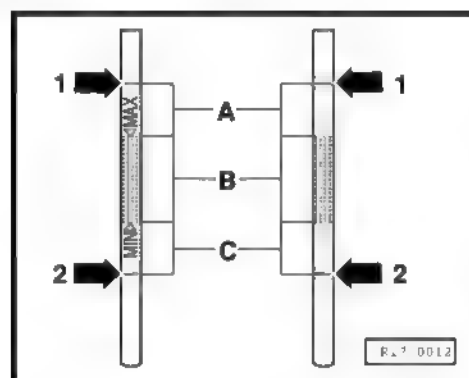
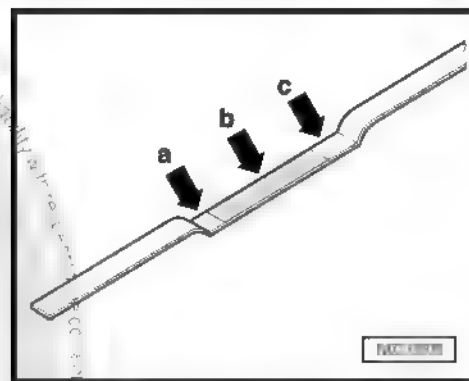
#### Condition 3

- Area -nd- Oil must be replenished. It is sufficient for the oil level to be at some point in area -b-.
- Area -b- Oil does not need to be replenished.
- Area -c- Oil must not be replenished.



#### Note

- ◆ With the oil level below the minimum mark (area -nd-), oil must be replenished up to (area -b-), according to oil specifications. ⇒ [page 50](#).
- ◆ With oil level above area -c- there is risk of damage to the catalyzer.
- ◆ When changing the oil, fill to maximum mark





## 4.11 Safety devices for transport - Remove

### 4.11.1 If available

- In some vehicle versions, front suspension blocking devices are installed. These vehicles can be identified by a label fixed to the internal rearview mirror -arrow-.



#### WARNING

- ◆ *Removal of these blocking devices is mandatory during vehicle delivery inspection!*

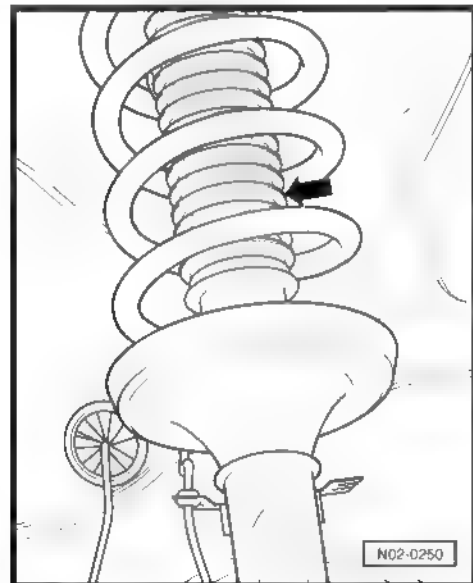
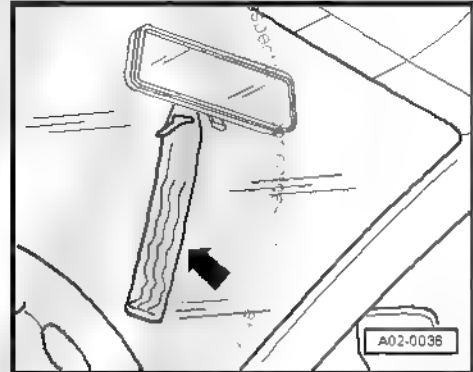
Carry out the following work:



#### Note

*Wheel removal is not necessary.*

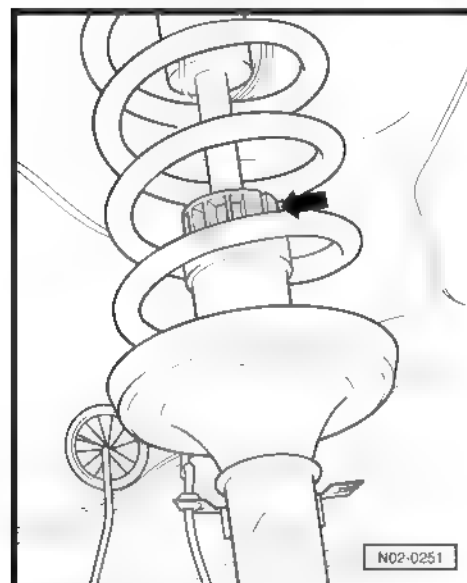
- Relieve the load on the helicoi~~dal~~ springs by lifting the vehicle with a workshop jack.
- Remove the safety devices (blocking devices) from the suspension column.
- Move the shock absorber rod protection caul upwards -arrow-.







- Remove blocking device -arrow- from shock absorber rod
- Move the shock absorber rod protection caul downwards



## 4.12 Airbags for driver and front passenger - Visual inspection of airbag units

### 4.12.1 Driver side airbag

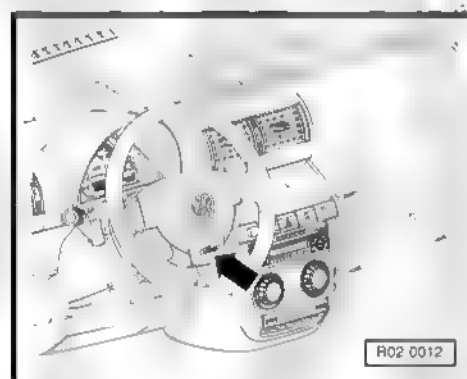
Airbag identification characteristic is the part with the inscription "AIRBAG" -arrow- on the cushioned plate of the steering wheel.

- Perform visual inspection of the cushioned surface to check for external damage.



#### WARNING

- ◆ *The cushioned plate on the steering wheel must never be glued or lined or reworked in any other way. This must be pointed out to the client to guarantee airbag function in the future.*
- ◆ *The cushioned plate on the steering wheel may only be cleaned with dry cloth or a moist (water) cloth.*



### 4.12.2 Passenger side airbag

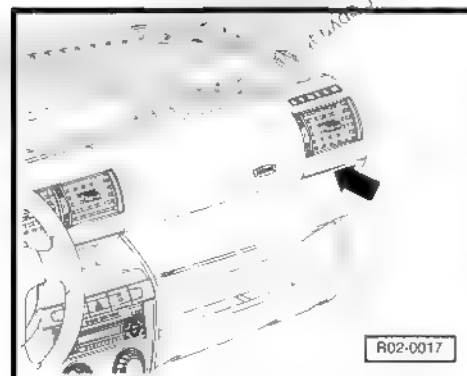
Airbag identification characteristic is the part with the inscription "AIRBAG" -arrow- on the right hand side of the instrument panel.

- Perform a visual inspection of the instrument panel surface to check for external damage



#### WARNING

- ◆ *The cover for the airbag module on the passenger side must never be glued, lined or otherwise reworked. This must be pointed out to the client to guarantee airbag function in the future.*
- ◆ *The the airbag module cover may only be cleaned with dry cloth or a moist (water) cloth.*





## 4.13 Windshield/rear window wiper and washer - Check function



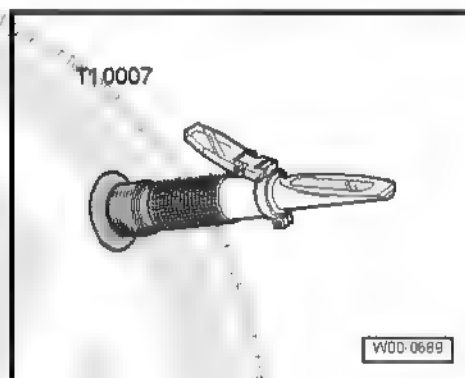
### Note

If, during the function check, wiper blade noise or vibration are detected, the wiper blade angle of contact to the windshield should be examined ➔ [page 47](#).

### 4.13.1 Replenish fluid in the reservoir

Special tools and workshop equipment required

- ◆ Refractometer for coolant analysis -EQ 7093 (VWB) - or - T 10007-

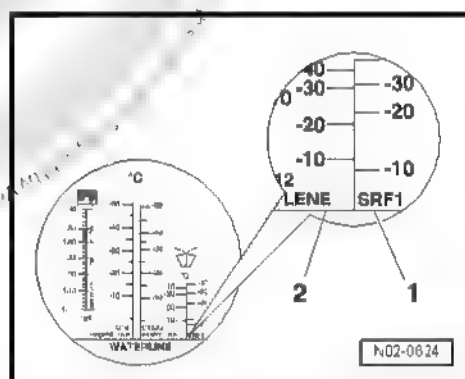


Exact values for the following tests can be obtained at the light/dark limit. For better visibility of the light/dark limit, use a pipette to place a drop of water onto the glass. The light/dark limit can now be easily recognized by the "WATERLINE".

- Check additive concentration for the windshield/rear window wiper with the Refractometer for coolant analysis -EQ 7093 (VWB) - or - T 10007- (follow the instruction manual).

The scale -1- of the refractometer is based on the original Volkswagen product as per chart: ➔ [page 46](#).

The scale -2- is based on commercial cleaning products as well as the commercial cleaning product mixture and the original Volkswagen product, as per chart: ➔ [page 46](#).



### 4.13.2 Additive applications for windshield/rear window wiper

Application	Additive for windshield/rear window washer
Arctic climate	-G 052 164 A1- or -G 052 164 A2-
Tropical climate	-G 052 131 A2- up to 07/2005 -G 052 184 A2- as from 08/2005



#### 4.13.3 Mixture relation for countries with arctic climate

Anti-freeze protection until	Additive for windshield/rear window washer	Water
-16 °C	1 part	2 parts
-30 °C	1 part	1 part
-40 °C	2 parts	1 part

#### 4.13.4 Mixture relation for tropical countries

Anti-freeze protection until	Additive for windshield/rear window washer	Water
-	1 part	99 parts

Replenish:

The windshield washer fluid reservoir must be filled completely.



#### Note

- ◆ The Additive for windshield/rear window washer -G 052 164 A1- or the -G 052 164 A2- have cleaning properties and protect the nozzles, the reservoir and the connecting hoses from freezing.
- ◆ May also be replenished with the original Volkswagen product during the hot seasons: Additive for windshield/rear window washer -G 052 131 A2- up to 07/2005 and the Additive for windshield/rear window washer -G 052 184 A2- as from 08/2005 without anti-freeze protection but with cleaning properties.
- ◆ Anti-freeze protection for the windshield washer must be assured to approx. -15 °C (in countries with arctic climate to approx. -35 °C).

#### 4.13.5 Windshield washer - Check and adjust nozzles

Check windshield washer system ⇒ Electrical system; Rep. Gr. 92 ; Windshield wiper and washer, rear window and headlights .

#### 4.13.6 Rear window washer - Check nozzle

⇒ Electrical system; Rep. Gr. 92 ; Windshield wiper and washer, rear window and headlights .

#### 4.14 Windshield and rear window wiper blades - Check resting position

⇒ Electrical system; Rep. Gr. 92 ; Windshield wiper and washer, rear window and headlights

#### 4.15 Wiper blade - Check incidence angle

⇒ Electrical system; Rep. Gr. 92 ; Windshield wiper and washer, rear window and headlights



## 4.16 Tire pressure (incl. spare wheel), rolling surface and lateral condition and depth of treads - Check



### Note

*For driving safety reasons, only tires of the same type and tread version must be installed on a vehicle!*

### 4.16.1 Check conditions (including spare wheel)

Perform the following work sequence:

Delivery inspection:

- Check rolling surfaces and tire sides for damage and eliminate, as necessary, any foreign objects, e. g. nails or glass splinters.



### Note

*If faults are detected, check if installation of a new tire is necessary.*

Inspection service:

- Check rolling surfaces, tire sides and depth of treads for damage and eliminate, as necessary, any foreign objects, e. g. nails or glass splinters.
- Check tires for wear, rolling surface worn on one side only, tire sides with pores, cuts or punctures.



### Note

*Any faults detected must be informed to the client.*

### 4.16.2 Check rolling surfaces (including spare wheel)

By the rolling surfaces it can be judged, for example, whether the vehicle requires a track and camber check:

- ♦ Burr formation on tire profiles may be caused by convergence problems.
- ♦ Rolling surfaces worn on one side only can be the result of camber problems

If these types of wear patterns are found, the cause should be determined by an axle geometry measurement (repair measure)

### 4.16.3 Check tire profile depth (incl. spare wheel)

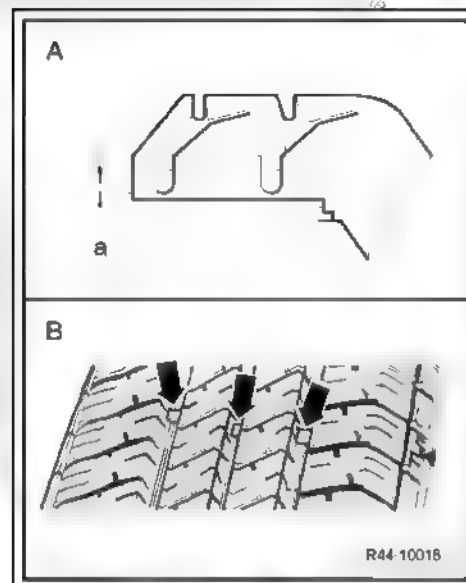
- Check tread depth

A - Minimum tread depth -nd- is 1.6 mm.



## B - Rolling surface tread wear indicators TWI -arrows-

Tires must be replaced as soon as the indicators in the treads are exposed by wear



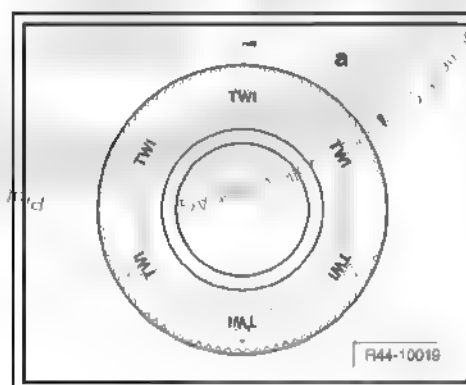
Tread wear indicator locations on the rolling surface are identified by TWI (Tread Wear Indicator) at every 60°-nd- of tire perimeter.

In this condition, tread depth is approx. 1.6 mm. However, considering that a worn tire is more likely to skid on wet road surfaces, it is recommended that tires be replaced when treads are 3 mm deep.



### Note

- ◆ *This value may vary according to different regulations in different countries.*
- ◆ *Minimum tread depth is reached as soon as the rolling surface wear indicator, adjusted to 1.6 mm, does not indicate any profile anymore.*
- ◆ *If profile depth is approaching legal limits, the client must be informed accordingly.*
- ◆ *Tires must also be replaced if they show cuts, deformation or any other kind of damage.*



## 4.16.4 Tire pressure (incl. spare wheel) - Check and adjust, as necessary

Special tools and workshop equipment required

- ◆ Tire inflating equipment -VAS 5216-





#### Note

- ◆ *Bear in mind that pressure values mentioned in the chart are for cold tires. On hot tires, excess pressure must not be reduced*
- ◆ *Tire pressure values for the respective model may also be found on an adhesive label on the inner side of the fuel tank door*

### 4.16.5 Tire pressure chart

(for all factory-installed tire sizes)



#### Note

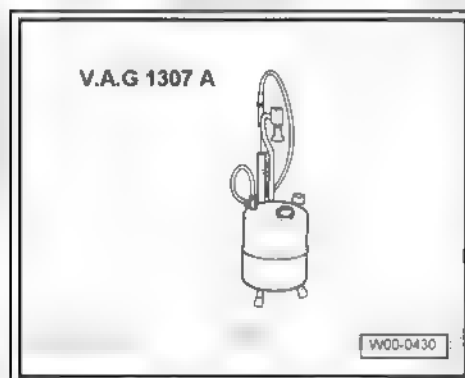
*Spare tire pressure is the maximum pressure specified for any tire installed on the vehicle.*

	PARTIAL load, front and rear (Pressure values in PSI/bar)		FULL load, front and rear (Pressure values in PSI/bar)	
Engine identification letters: ASY				
185/60 R14 82H	30 / 2,1	29 / 2	33 / 2,3	37 / 2,6
195/55 R15 85H	27 / 1,9	27 / 1,9	28 / 1,9	33 / 2,3
Engine identification letters: BAH, BLH, BPA, CCRA, and CFZA				
185/60 R14 82H	30 / 2,1	29 / 2	33 / 2,3	37 / 2,6
195/55 R15 85H	28 / 1,9	28 / 1,9	30 / 2,1	34 / 2,3
205/60 R15 91V	29 / 2	32 / 2,2	29 / 2	38 / 2,6
Spare wheel	Spare tire pressure is the maximum pressure specified for any tire installed on the vehicle.			

### 4.17 Engine oil - Drain, fill up and change the oil filter

Special tools and workshop equipment required

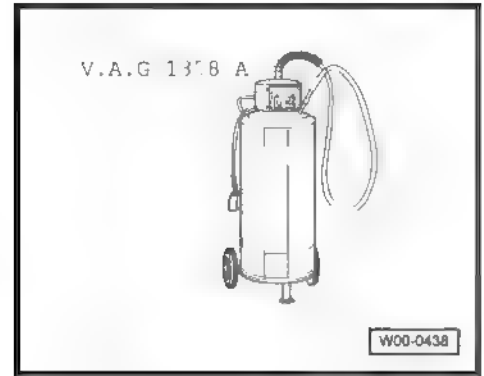
- ◆ Oil aspirator -VAG 1307 A-



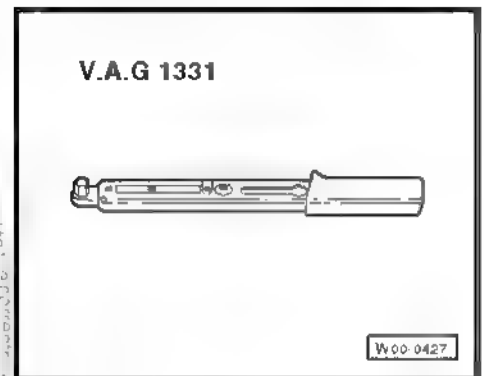




◆ Oil aspirator -V A.G 1358 A-



◆ Torque wrench - 5 to 50 Nm (socket 1/2") -VAG 1331-



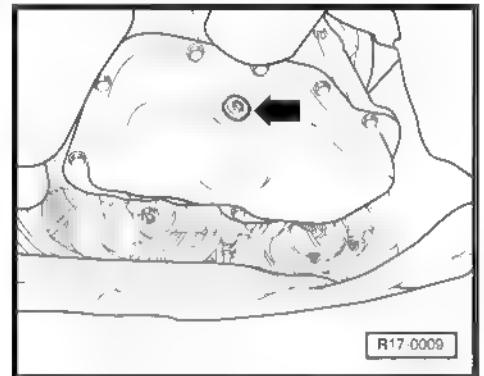
Perform the following work sequence:

- Aspirate engine oil with the Oil aspirator -VAG 1307 A- or the Oil aspirator -VAG 1358 A- .
- Remove oil drain plug -arrow- and, then, discard it.
- Allow the oil to leave the engine.
- Tightening torque for the new drain plug:  
arrow - Torque: 30 Nm.



Note

- ◆ *Make sure not to exceed tightening torque. Excessive tightening torque may cause damage and leakages in the drain plug area.*
- ◆ *Install oil drain plug*



WARNING

- ◆ *Observe disposal regulations!*

#### 4.17.1 Replace the oil filter

Special tools and workshop equipment required

- ◆ Wrench -SW 30-
- ◆ Wrench -SW 36-

Perform the following work sequence

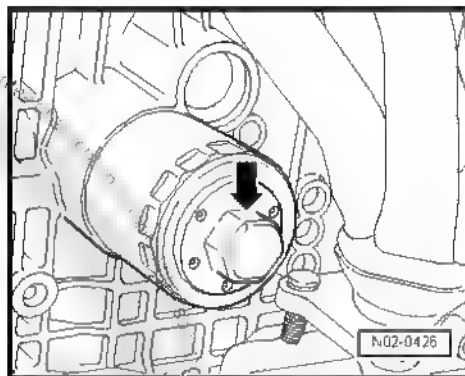


- Loosen the filter by the hexagon **arrow** with the Wrench SW 30- and remove it.



**WARNING**

- ◆ *Observe disposal regulations!*



#### 4.17.2 Fill with engine oil

Based on oil properties ➔ [page 29](#), use only the following oils approved for engines:

#### 4.17.3 Oil specifications for engine identification letters: BAH, BLH, BPA, CCRA, and CFZA

- Vehicles with "service according to time or mileage" (QG0): VW 502 00.

#### 4.17.4 Supply



**WARNING**

- ◆ *Observe disposal regulations!*

- After supplying the engine with oil, wait for at least 3 minutes and check oil level.
- Pull the dipstick out and clean it with a clean cloth and fully insert it again to the (stopper).
- Pull the dipstick out again and check the oil level for the following conditions:

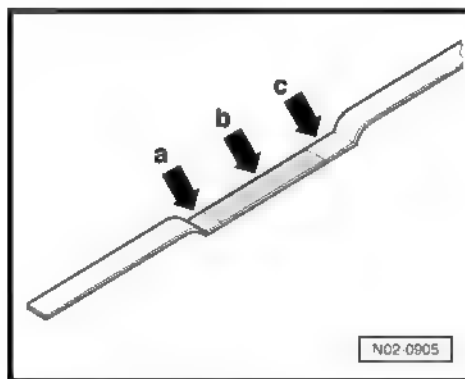
##### Condition 1

- |          |   |
|----------|---|
| Area -a- | Minimum indication area. Oil must be replenished. It is sufficient for the oil level to be at some point in area -b-. |
| Area -b- | Oil does not need to be replenished.  |
| Area -c- | Maximum indication area. Oil must not be replenished.   |



**Note**

- ◆ *With oil level above area -c- there is danger of damaging the catalyzer*
  - ◆ *Oil level must always be between minimum and maximum marks. Make sure that the oil level does not exceed the maximum mark.*
- Pull the dipstick out to check the oil level again.

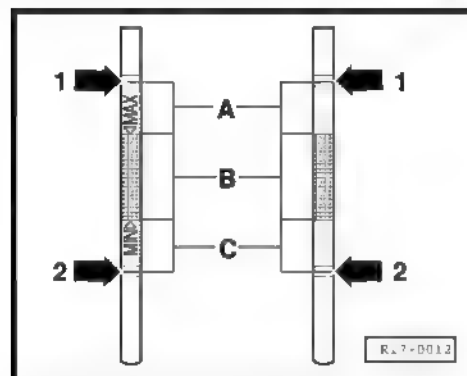




#### Condition 2

- Area -A- Oil must not be replenished
- Area -B- Oil does not need to be replenished.
- Area -C- Oil must be replenished. It is sufficient for the oil level to be at some point in area -B-.
- Arrow -1- Maximum mark
- Arrow -2- Minimum mark

- Pull the dipstick out to check the oil level again.



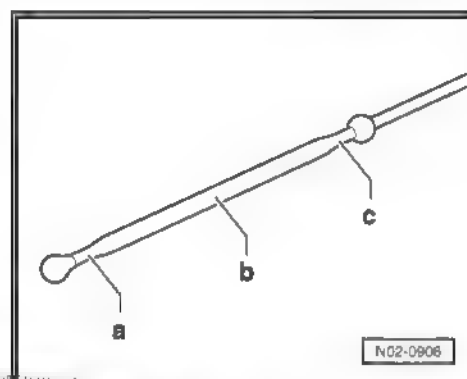
#### Condition 3

- Area -nd- Oil must be replenished. It is sufficient for the oil level to be at some point in area -b-.
- Area -b- Oil does not need to be replenished.
- Area -c- Oil must not be replenished.



#### Note

- ◆ With the oil level below the minimum mark (area -nd-), oil must be replenished up to (area -b-), according to oil specifications. [⇒ page 50](#)
- ◆ With oil level above area -c- there is risk of damage to the catalyzer.
- ◆ When changing the oil, fill to maximum mark.



### 4.18 Engine and components in engine compartment (upper and lower sections) - Perform a visual check for damage and leakages

The visual check is to be performed as follows:

- Check engine and components in the engine compartment for damage and leakages.
- Check cables, hoses and connections of the following systems for leakage, wear, porosity and areas subject to breakage:
  - ◆ Fuel supply system
  - ◆ Cooling and heating systems
  - ◆ Brake system



#### Note

- ◆ Provide for all detected faults to be eliminated during repair.
- ◆ If brake fluid alteration not caused by brake pad wear is found, the cause must be determined and eliminated (repair measure).

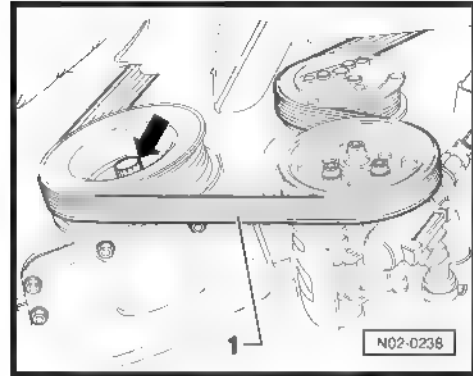
### 4.19 Poly-V and elastic belt - Check condition

Perform the following work sequence:

- Lift the vehicle.



- Rotate the engine by the belt shock absorber/pulley -arrow- with a socket wrench.
- Check the Poly-V from below for:
  - ◆ Tears on the lower side (internal ruptures, cross-sectional ruptures)
  - ◆ Separation of layers (upper layer, cordons)
  - ◆ Rupture in the lower part.
  - ◆ Frayed cordons.
  - ◆ Flank wear (material wear, frayed flanks, hardened flanks - vitrified flanks -, surface tears).
  - ◆ Oil and grease residues



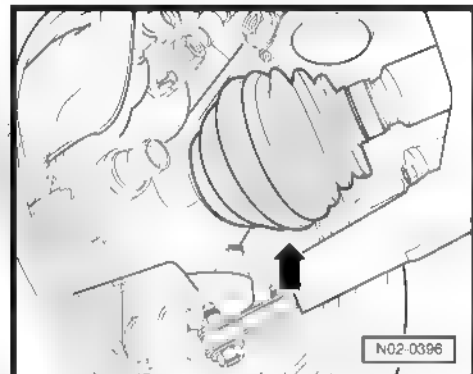
#### Note

*If defects are found, the Poly-V belt must be replaced. This will avoid breakdowns and operational failures. Poly-V belt replacement is a repair measure.*

### 4.20 Universal joint bellows - Visual check

Perform the following work sequence:

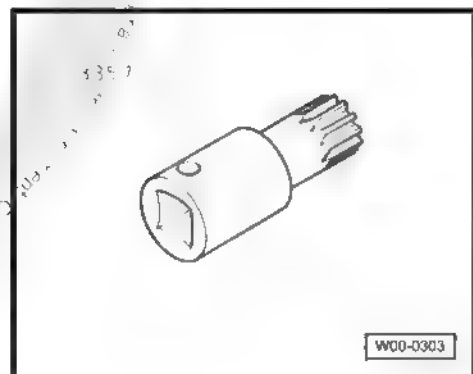
- Check bellows for external articulations -arrow- and bellows for internal articulations (not visible in the illustration) for leakage and damage.



### 4.21 Transmission - Check oil level and replenish, as necessary

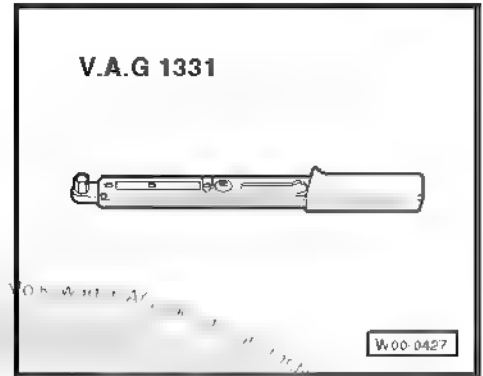
Special tools and workshop equipment required

- ◆ Multi-teeth socket SW 27 -3357-
- ◆ or Hexagonal socket 17 mm



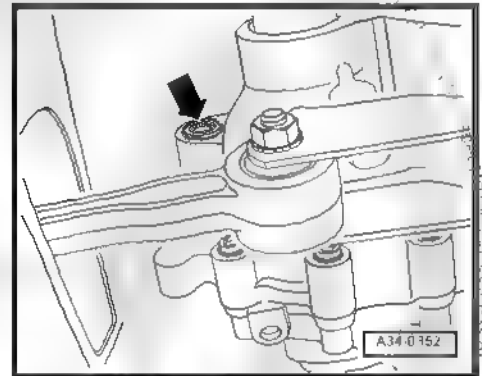


- ◆ Torque wrench - 5 to 50 Nm (socket 1/2") -VAG 1331-



#### 4.21.1 02T 5-speed transmission

- Remove the oil filling plug from the transmission -arrow-.
- The oil level is correct if the transmission is filled up to the lower edge of the oil supply orifice.
- Reinstall the plug and tighten to 25 Nm of torque.



#### 4.22 Brake system - Perform visual inspection to detect damage and leakages

Check the following components for damage and leakages:

- ◆ Master cylinder.
- ◆ Master cylinder (in anti-block system: Hydraulic unit).
- ◆ Brake force adjuster.
- ◆ Brake cylinder.
- Make sure brake system hoses are not twisted.
- In addition, make sure that no brake system hoses touch any vehicle components when the steering is turned fully in either direction.
- Check hoses for porosity and areas subject to breakage.
- Check brake system hoses and tubing for signals of wear.
- Also check brake system connections and fastening for correct seating, leakages and corrosion.



#### WARNING

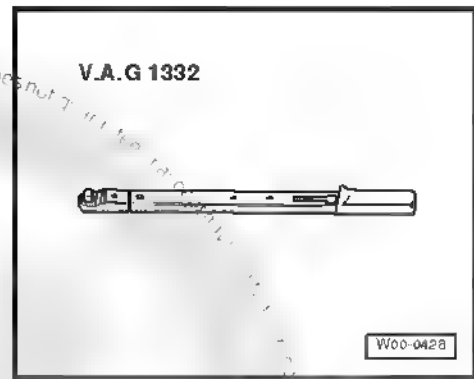
*Detected faults must be eliminated (repair measure).*

#### 4.23 Front brake pads - Check thickness

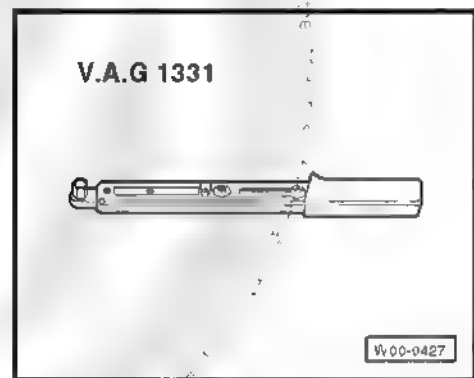
Special tools and workshop equipment required



- ◆ Torquemeter - 40 to 200 Nm (socket 1/2") -VAG 1332-



- ◆ Torque wrench 5 to 50Nm (socket 1/2") -VAG 1331-



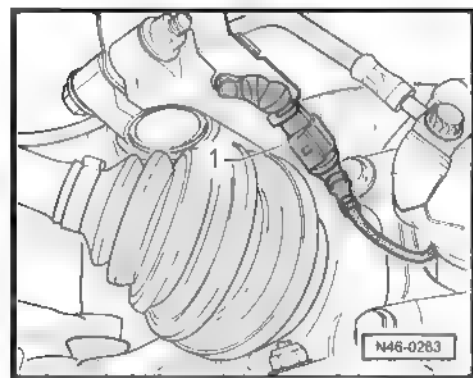
#### 4.23.1 Brake cylinder

Perform the following work sequence:

- For better evaluation of remaining brake pad thickness, the driver side wheel should be removed (wear is greater here than on passenger side).
- Remove hubcap/super hubcap.

The hubcap removal hook is in the tool kit.

- Loosen the wheel fastening screws and remove the wheel.
- For vehicles with brake pad wear indicator, disconnect the connector -1-.





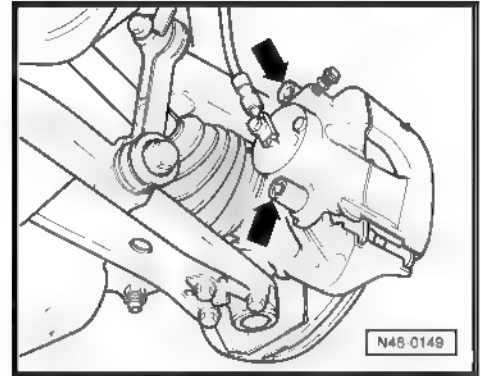


- Loosen the two screws -arrows- and remove the brake cylinder



#### WARNING

*Remove the brake cylinder and fasten it with a wire, in way that its weight will not stretch and damage the flexible brake tube.*

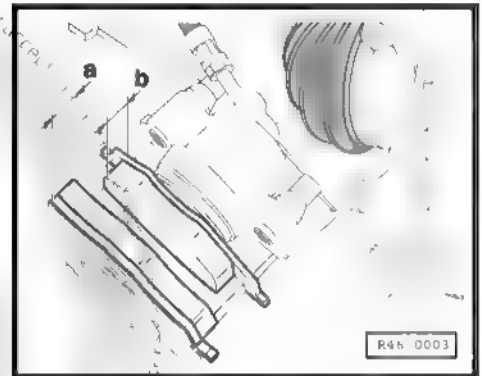


- Measure inner and outer brake pad thickness.
- Outer brake pad thickness including backplate -nd-.
- Inner brake pad thickness including backplate -b-.
- Wear limit: 7 mm with backplate.

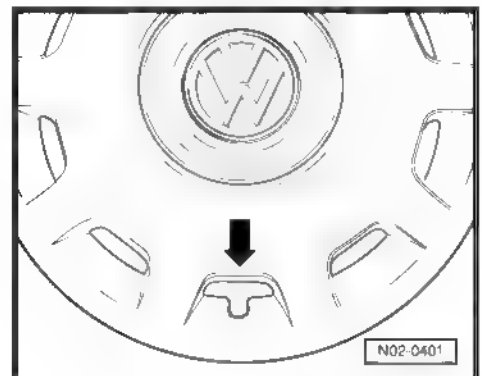


#### Note

- ◆ *With a brake pad thickness (including backplate) of 7 mm, the brake pads have reached their wear limit and need to be replaced (repair measure). The client must be informed*
- ◆ *When replacing the disc brake pads, the brake rotors should also be checked for wear! Examination and eventual replacement of brake rotors are repair measures.*



- Installation proceeds in reverse order of removal.
- The pad with the larger area is installed on the external side! (FS II brake system).
- Apply 25 Nm of torque to the brake cylinder fastening screws (FS II brake system).
- Apply 30 Nm of torque to the brake cylinder fastening screws (FS III brake system).
- When replacing the wheel, screw to the marked position.
- Install wheel fastening screws crosswise and apply 120 Nm of torque.
- After finalizing the work, return the hubcap/super hubcap removal hook to the tool kit.
- Install the super hubcap in a way to allow the tire valve to protrude from the opening -arrow- provided.



### 4.23.2 Disk brake rotor - Check thickness

Please check the following

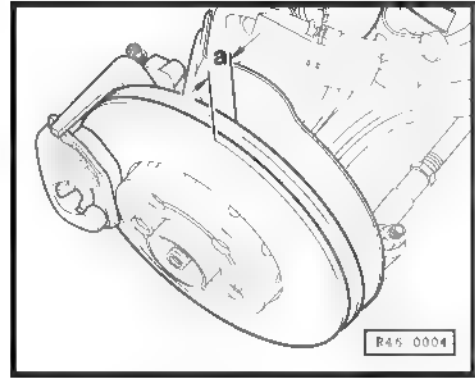


- Brake rotor thickness 18 mm for FSII and 22 mm for FSIII  
-nd-
- Wear limit 16 mm for FSII and 19 mm for FSIII



**Note**

*Always replace both rotors of the same axle*



#### 4.23.3 Brake disc with visual check - Check

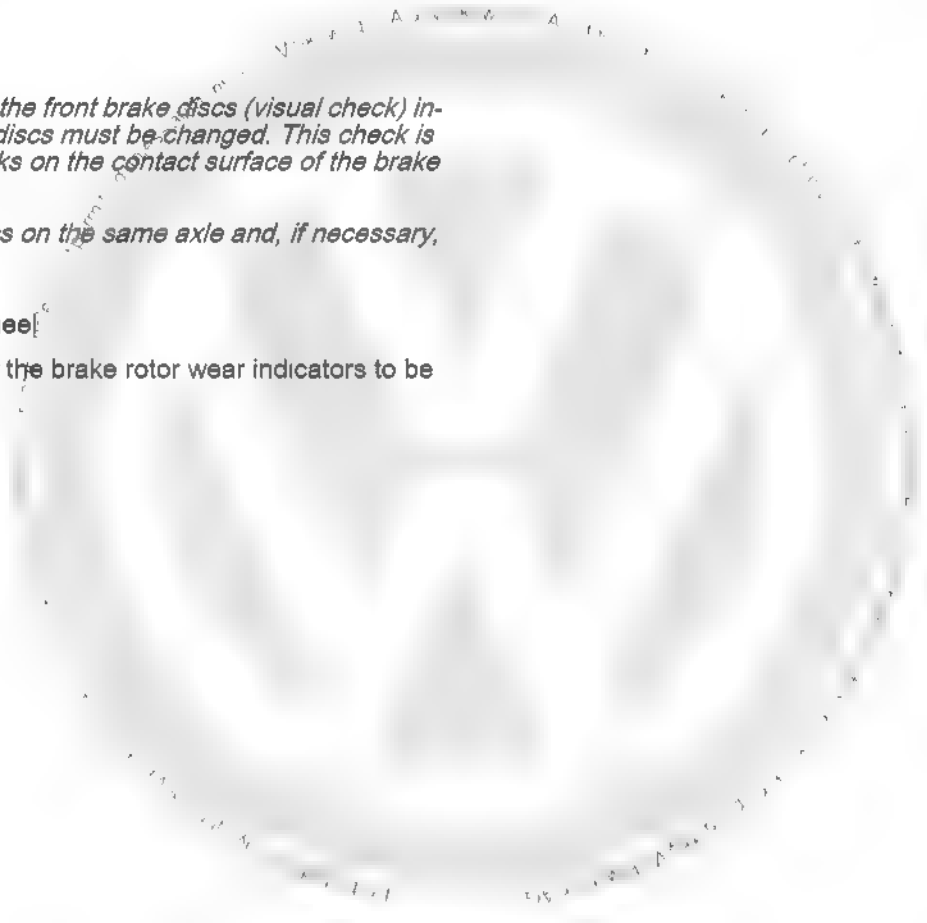


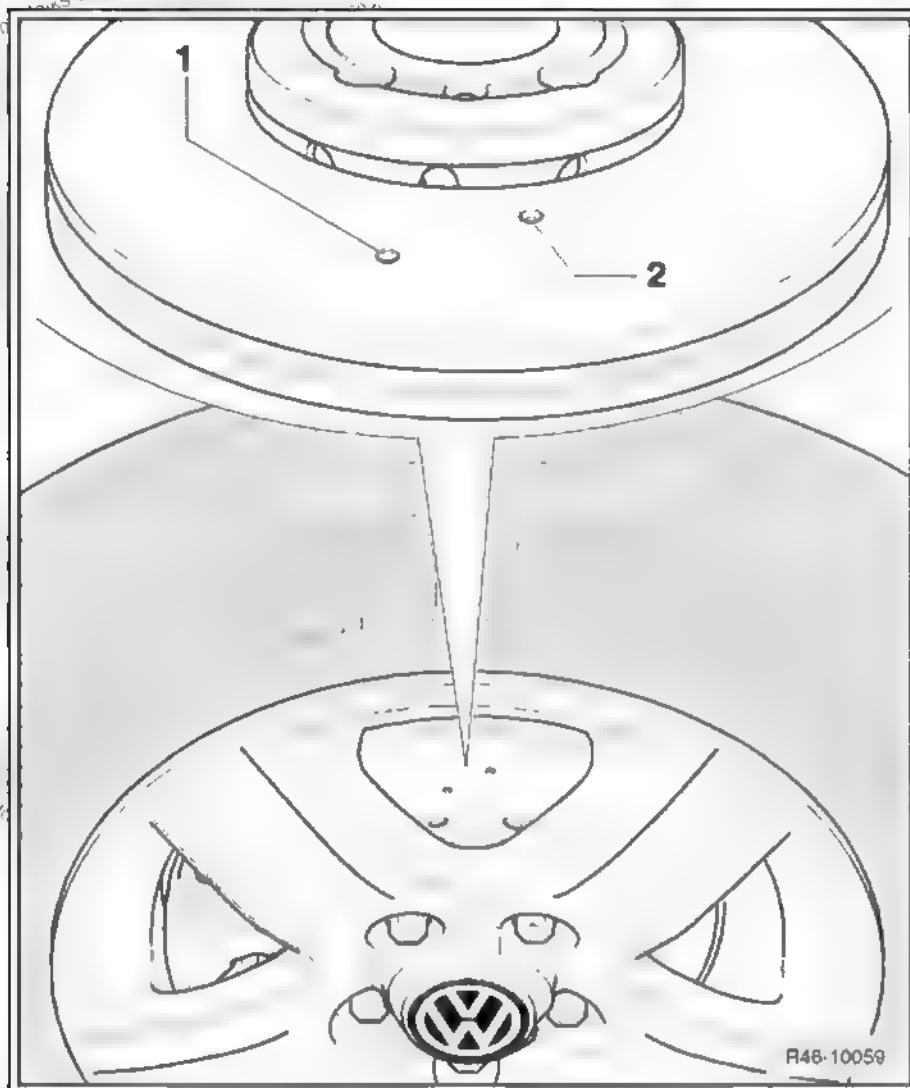
**Note**

- ◆ *The wear indicators on the front brake discs (visual check) indicate when the brake discs must be changed. This check is made by using the marks on the contact surface of the brake discs.*
- ◆ *Always check both discs on the same axle and, if necessary, replace them.*

Vehicles with light-alloy wheels

Position the wheel to allow the brake rotor wear indicators to be seen (visual check).





- ◆ Wear indicator -1- is located on the centre of the brake disc contact area.
- ◆ Wear indicator -2- is located close to the internal edge of the brake disc.



#### Note

- ◆ *If the front brake disc wear indicator markings (visual check) cannot be viewed due to wheel design, the wheels must be removed.*
- ◆ *If front wheel removal for brake rotor inspection becomes necessary, on reinstalling the wheels tighten the wheel fastening screws to a torque of 120 Nm.*

Checking conditions of front brake disc wear:

1 - Wear indicators -1- and -2- are visible

The brake discs need not be replaced

2 - Only wear indicator -2- is visible

The brake discs do not require replacement, but pay attention to the next change



3 - No brake disc wear indicator is visible

Replace the brake discs.

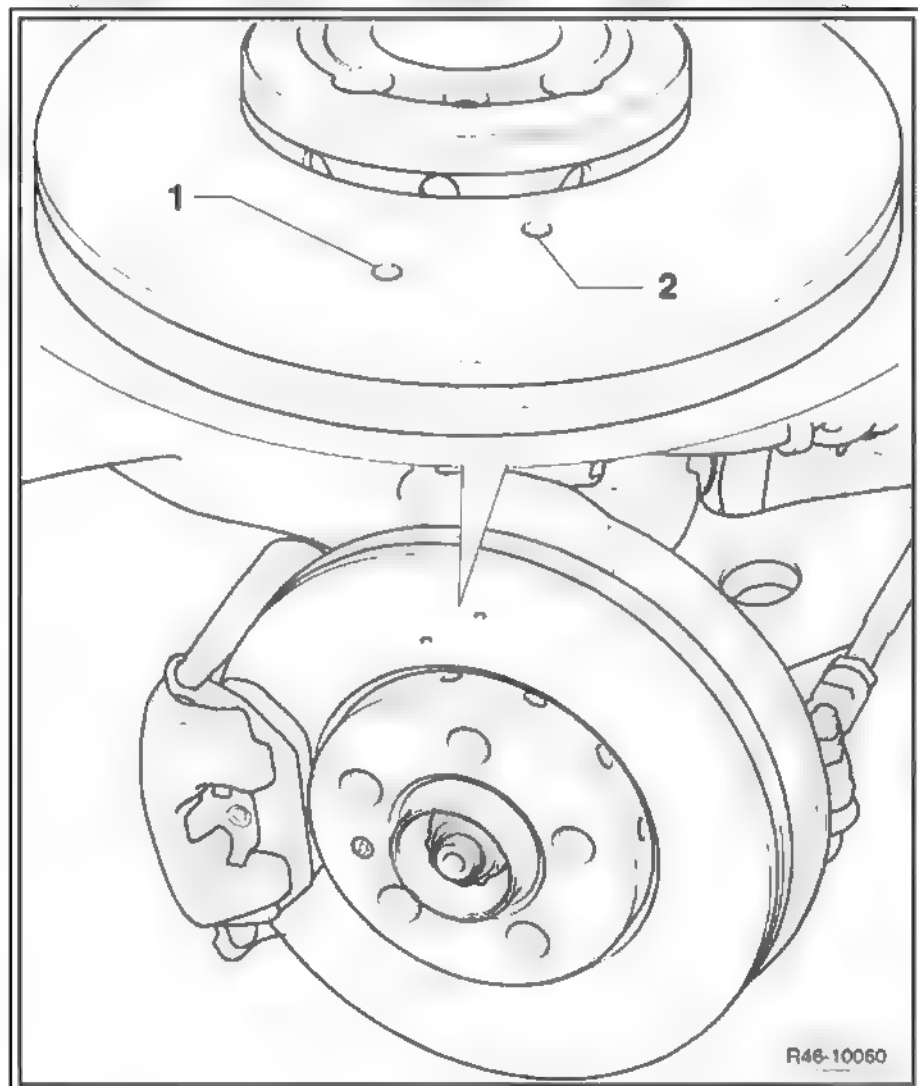
Remove and install the front brake discs

Vehicles with steel wheel



#### Note

- ◆ In order to view the brake disc wear indicators (visual check) in vehicles with steel wheels, the front wheels must be removed
- ◆ After checking the brake rotors, reinstall the wheels and tighten the wheel fastening screws to a torque of 120 Nm.



- ◆ Wear indicator -1- is located on the centre of the brake disc contact area.
- ◆ Wear indicator -2- is located close to the internal edge of the brake disc

Checking conditions of front brake disc wear:

1 - Wear indicators -1- and -2- are visible



The brake discs need not be replaced

2 - Only wear indicator -2- is visible

The brake discs do not require replacement, but pay attention to the next change

3 - No brake disc wear indicator is visible

Replace the brake discs

Remove and install the front brake discs

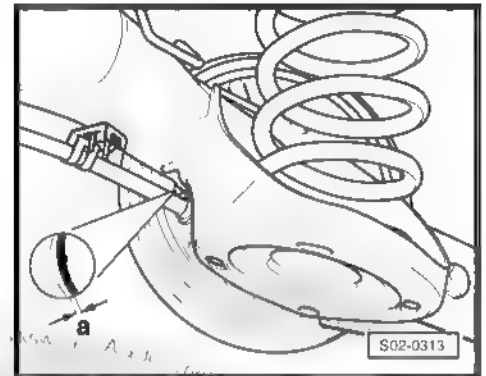
#### 4.23.4 Rear wheel brake (drum brake)

- Check brake lining thickness through a hole in the brake support plate -nd- (with the help of a lamp).

Wear limit: 2.5 mm (lining thickness only).

With a friction material thickness (without the backplate) of 2.5 mm, the brake linings have reached their wear limit and need to be replaced (repair measure). The client must be informed!

- A more thorough check of drum brake lining thickness and possible contamination, only when a repair involving drum brake removal occurs ⇒ Brake system; Rep. Gr. 46 ; Brakes - Mechanical systems .



#### 4.24 Underbody protection - Perform visual check for damage

The visual check must include the floor, wheel houses, and lower longitudinal members!



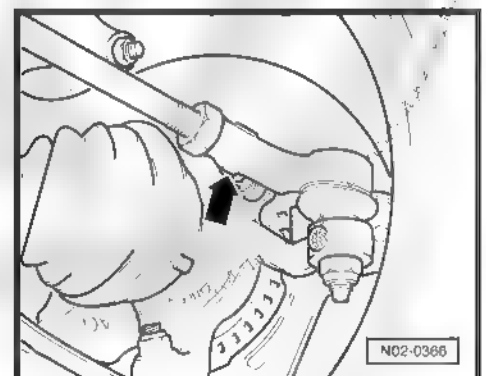
Note

*Detected faults must be eliminated (repair measure). This will avoid oxidation and rust perforations.*

#### 4.25 Steering bars - Check clearance, fastening, and sealing cauls

Perform the following work sequence:

- With the vehicle elevated (wheels freely suspended) check lateral movement of the bars -arrow- for clearance.
- Check fastening.
- Check sealing cauls for damage and proper adjustment.

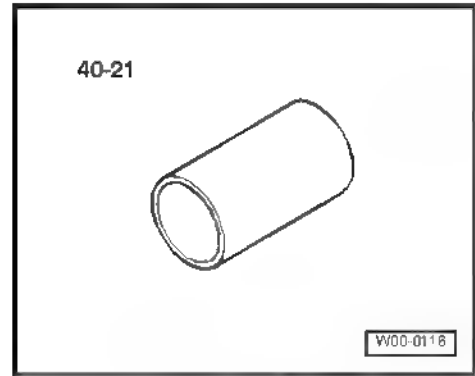


#### 4.26 Rear wheels: Adjust the roller bearing clearance

Special tools and workshop equipment required



◆ Support tube -40-21-



◆ Extractor for hub nut protectors -VW 637/2- .



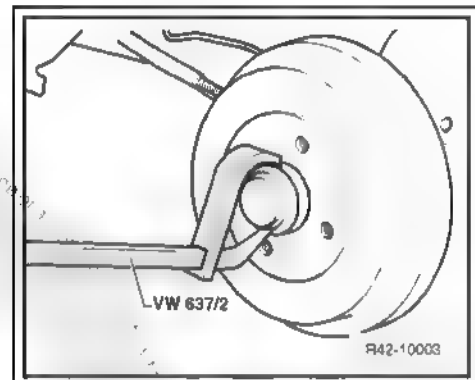
Check bearing clearance

- Remove the wheel.
- Remove wheel hub protector using the Extractor for hub nut protectors -VW 637/2- .
- The clearance adjustment will be correct when it is possible to move the thrust washer only in the radial direction, and when moving the brake's drum in the axial direction, it does not have an apparent clearance.



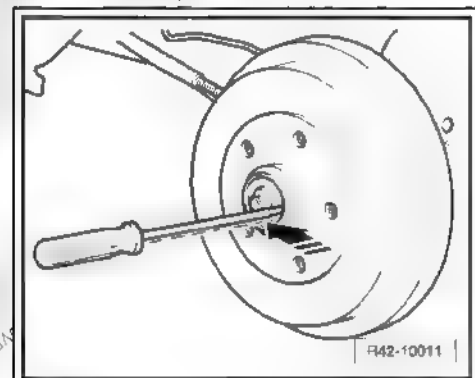
Caution

*Radial washer movement is indispensable, and it must be exactly in accordance with the following procedure.*



Procedure for checking bearing clearance adjustment.

1. Place a screwdriver between the washer and the brake drum hub, so that the screwdriver is perpendicular to the washer
1. Move the washer in the radial direction with a light pressure of the forefinger-arrow- applied to the end of the screwdriver







1. Do not rotate or lever -arrows- with the screwdriver.
2. If the washer does not move it is necessary to adjust the roller bearing clearance → [page 63](#).

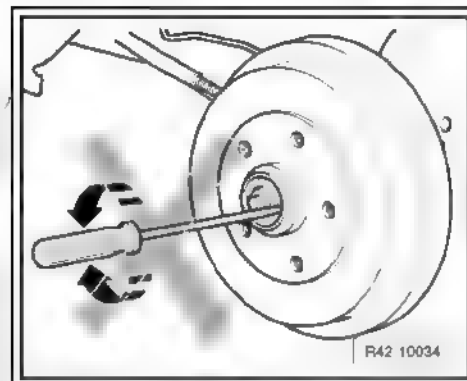


#### WARNING

*The screwdriver should touch only the washer and never the external wheel roller bearing.*

*Never turn or leverage the screwdriver, thus ensuring that the screwdriver does not touch the brake drum hub under no circumstances.*

*If the notes above are not strictly followed, the adjustment of the roller bearing clearance will be jeopardized (it can lead to noises and breakage of roller bearings).*



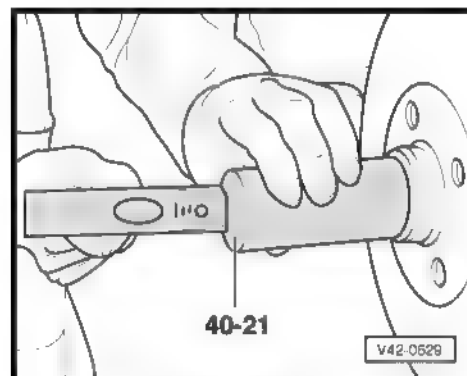
#### Adjust the roller bearing play

- Unlock and remove the locknut and the lock washer.
- Loosen or tighten the nut, relieving or increasing the pressure on the thrust washer; simultaneously, check its movement in the radial direction, according to the procedure described above → [page 62](#).
- Install new locking washer and locknut, tightening to 70 Nm.
- Check the roller bearing clearance adjustment again. If necessary, repeat the procedure until the adjustment is correct → [page 63](#).
- The clearance adjustment will be correct when it is possible to move the thrust washer only in the radial direction, and when moving the brake's drum in the axial direction, it does not have an apparent clearance.
- Lock the nut and the locknut.
- Install wheel hub protector using the Support tube -40-21-



#### Note

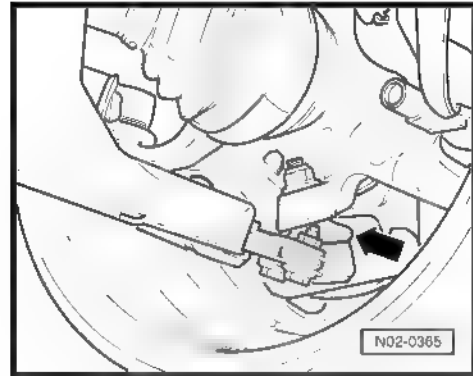
*The wheel hub cover must be replaced with every removal.*





#### 4.27 Suspension arm articulations - Visual check

- Check sealing cauls at suspension arm articulations -arrow- for damage and leakages



#### 4.28 Cooling system - Check anti-freeze additive and coolant level



##### Note

- ◆ All engines are provided with anti-freeze additive for the radiator and anti-corrosion additive G 12 - as per TL VW 774 F (purple colored). Make sure only the G 12 is replenished.
- ◆ Do not mix with anti-freeze additive G 11, blue or green.



##### WARNING

Coolant additive G 12 must not be mixed with any other additives. Mixing will cause serious damage to the engine. If a brown mixture is found, coolant must be replaced immediately (repair measure).



##### Note

- ◆ The G 12 as a permanent filling (no replacement needed) is adequate for cast iron and aluminum engines and will protect engines from freezing, damage caused by corrosion, lime-stone accumulation, and overheating
- ◆ G 12 increases the boiling point to 135° C and provides for better heat dissipation.
- ◆ Coolant proportion must be at least 40 % (anti-freeze protection to - 25° C) and must not exceed 60 % (anti-freeze protection to - 40 ° C). Otherwise, anti-freeze protection will be reduced and cooling capacity will also be affected.

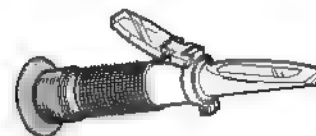
#### 4.28.1 Check anti-freeze protection and, if necessary, replenish cooling system

Special tools and workshop equipment required



- ◆ Refractometer for coolant analysis -EQ 7093 (VWB) - or - T 10007-

T10007



W00-0689



#### Note

Exact values for the following tests can be obtained at the light/dark limit. For better visibility of the light/dark limit, use a pipette to place a drop of water onto the glass. The light/dark limit can now be easily recognized by the "WATERLINE".

- Check anti-freeze additive concentration with the Refractometer for coolant analysis -EQ 7093 (VWB) - or - T 10007- (follow the instruction manual).

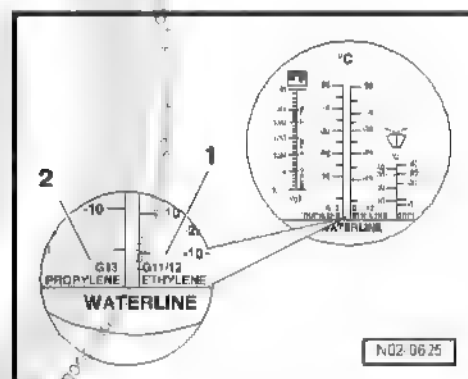
The scale -1- of the refractometer is related to the additives for coolants - G 12 - and - G 11 -.

The scale -2- is related to the refrigeration additive - G 13 -.



#### Note

- ◆ Anti-freeze protection must be guaranteed to approx.  $-25^{\circ}\text{C}$  (in countries with arctic climate to approx.  $-35^{\circ}\text{C}$ ).
- ◆ If, for climate reasons, a greater anti-freeze protection is necessary, the percentage of G 12 may be increased, but only up to 60% (anti-freeze protection to  $-40^{\circ}\text{C}$ ) as anti-freeze protection may be reduced again and cooling capacity is also affected.
- If the anti-freeze protection was strongly reduced, drain the difference volume mentioned in the anti-freeze protection chart ➔ [page 65](#) and replace it with refrigeration additive - G 12- as per TL VW 774 F.



N02-0625



#### WARNING

- ◆ Observe disposal regulations!

### 4.28.2 Anti-freeze chart

Anti-freeze protection until $^{\circ}\text{C}$		Difference quantity in liters <sup>9)</sup>
Real value <sup>7)</sup>	Nominal value <sup>8)</sup>	
0	-25	3,0
	-35	3,5
-5	-25	2,5
	-35	3,5



Anti-freeze protection until °C		Difference quantity in liters <sup>9)</sup>
Real value <sup>7)</sup>	Nominal value <sup>8)</sup>	
-10	-25	2,0
	-35	3,0
-15	-25	1,5
	-35	2,5
-20	-25	1,0
	-35	2,5
-25	-35	2,0
-30	-35	1,0
-35	-40	0,5

7) Real value: is the result of the coolant concentration measurement for the measured vehicle

8) Nominal value: is the value applied to the region where the vehicle is operated. Example: The nominal value for Brazil is -25°C, and for arctic countries the value is -35°C.

9) Difference quantity in liters: is the quantity removed from the cooling system and replenished in the same quantity, only with additive.

- After a test drive, the cooling system anti-freeze additive concentration must be checked again.

#### 4.28.3 Check coolant level and, if necessary, replenish the cooling system

- Check the coolant level in the reservoir with a cold engine.
- ♦ **Delivery inspection:** With a cold engine, the coolant level must be in the central area between the minimum and maximum markings of the reservoir. If it is above the central area, remove the excess to adjust the level to the central area between the minimum and maximum markings of the reservoir. With a hot engine, the coolant level may reach the maximum marking of the reservoir.
- ♦ **Inspection service:** With a cold engine, the coolant level may be between the minimum marking and central area of the reservoir. If it is above the central area, remove the excess to adjust the level to the central area between the minimum and maximum markings of the reservoir. With a hot engine, the coolant level may reach the maximum marking of the reservoir.
- If the coolant level is below the minimum marking during the inspection service, the cooling system must be replenished according to the specified mixture proportion to the central area between the minimum and maximum markings of the reservoir.



#### Note

*If brake fluid loss not caused by consumption is found, the cause must be determined and eliminated (repair measure).*

#### 4.28.4 Mixture relation

Anti-freeze protection until	Coolant additive	Water
-25 °C	approx. 40%	approx. 60 %
-35 °C	approx. 50 %	approx. 50 %



Anti-freeze protection until	Coolant additive	Water
-40 °C	approx. 60 %	approx 40%



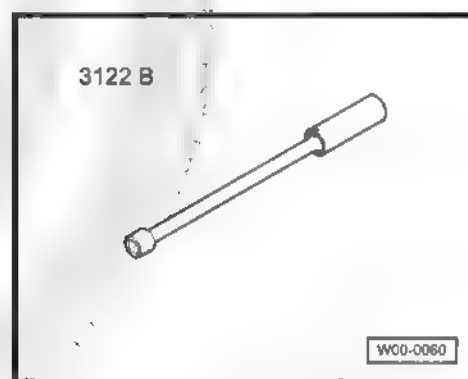
#### Note

- ◆ The refrigeration additive - G 12 - avoids damage caused by freezing and corrosion, accumulation of limestone and it also increases the boiling point. For these reasons, the cooling system must be supplied with anti-freeze and anti-corrosion agents all year long
- ◆ Especially in countries with tropical climate, the coolant guarantees operations through the elevation of the boiling point at high engine loads.
- ◆ Coolant concentration shall not be reduced by adding water in hot seasons or hot countries. Anti-freeze additive percentage shall be of a minimum 40 %.

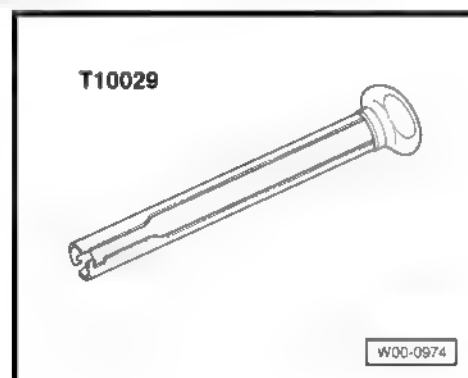
## 4.29 Spark plugs - Replace

Special tools and workshop equipment required

- ◆ Plug spanner -3122B-

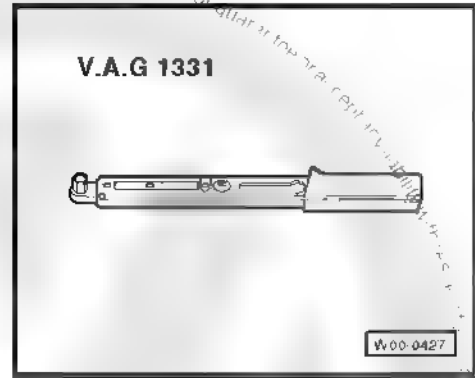


- ◆ Assembly tool -T10029-





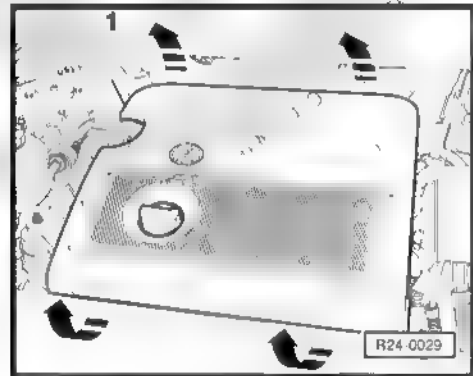
- ◆ Torque wrench - 5 to 50 Nm (socket 1/2") -VAG 1331-



#### 4.29.1 Identification letters for BAH, BLH, and BPA engines

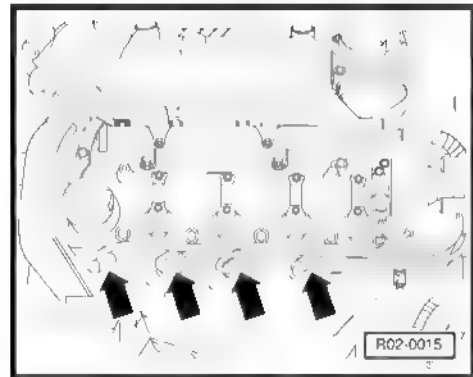
- Remove the air ventilation hose from oil sump -1- from air filter casing.
- For the BPA engine, it is also necessary to remove the left aeration hose of the Cold start valve -N17- .
- Remove the air filter housing from the supports and from the throttle valve control unit -arrows- and remove the air filter housing.

Perform the following work sequence:



- Loosen the spark plug connectors -arrows- with Assembly tool -T10029- .
- Remove the spark plugs with the Plug spanner -3122B- .
- Install the spark plugs with the Plug spanner -3122B- and Torque wrench - 5 to 50 Nm (socket 1/2") -VAG 1331- .

Tightening torque: 30 Nm.



#### Note

- ◆ *Air filter housing installation begins with inserting the throttle valve control unit nozzle, fitting the lateral supports and after that the front supports*
- ◆ *Apply neutral soap or coolant additive to the fastening devices and the trim for the throttle valve control unit nozzle to facilitate the installation.*



#### WARNING

- ◆ *Observe disposal regulations!*

- Connect the spark plug connectors
- Install the air filter housing





#### 4.29.2 Identification letters of the ASY engine

- All cable clamps that open or break during the engine removal shall be replaced and installed on the same place when installing the engine
- Remove engine bonnet towards the -arrows-

Perform the following work sequence

- Remove the spark plug connectors -arrows- with Assembly tool -T10029- .
- Remove the spark plugs with the Plug spanner -3122B- .
- Install the spark plugs with the Plug spanner -3122B- and Torque wrench - 5 to 50 Nm (socket 1/2") -VAG 1331- .

Tightening torque: 30 Nm.



#### Note

- ◆ *Air filter housing installation begins with inserting the throttle valve control unit nozzle, fitting the lateral supports and after that the front supports.*
- ◆ *Apply neutral soap or coolant additive to the fastening devices and the trim for the throttle valve control unit nozzle to facilitate the installation.*



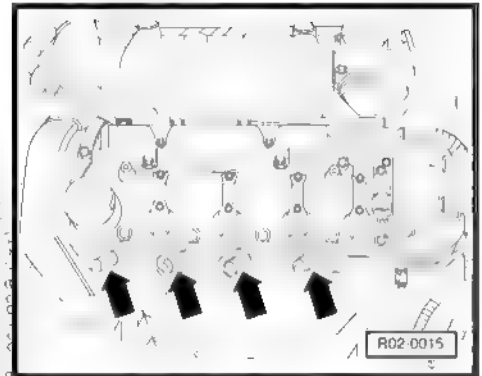
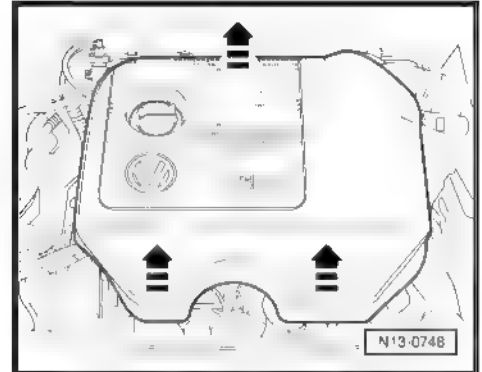
#### WARNING

- ◆ *Observe disposal regulations!*

- Connect the spark plug connectors.
- Install the engine cover.

#### 4.29.3 Identification letters of CCRA and CFZA engines

Perform the following work sequence:





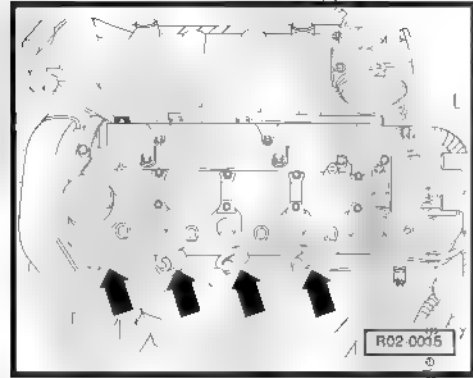
- Remove the spark plug connectors -arrows- with Assembly tool -T10029- .
- Remove the spark plugs with the Plug spanner -3122B- .
- Install the spark plugs with the Plug spanner -3122B- and Torque wrench - 5 to 50 Nm (socket 1/2") -VAG 1331- .

Tightening torque: 30 Nm.



#### WARNING

- ◆ *Observe disposal regulations!*



- Connect the spark plug connectors.

### 4.30 ATF oil reservoir for power steering - Adjust level

Perform the following work sequence:

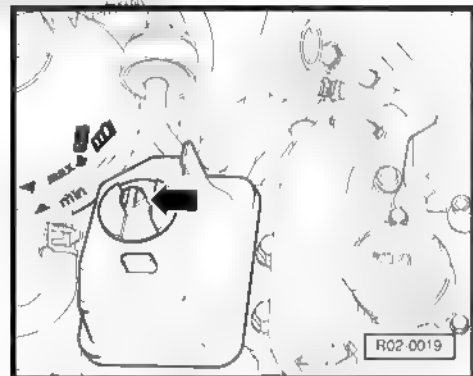
Oil in cold condition:

- The engine must be switched off and the front wheels aligned.
- Remove the lid with a screwdriver -arrow-.
- Clean oil level measuring stick with a clean cloth.
- Install the lid by hand and remove it again.



#### Note

*Only the second oil level measurement must be considered.*

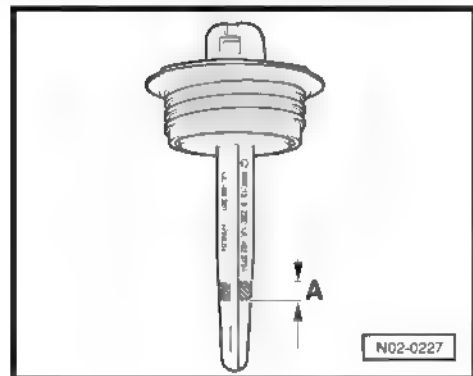


- Check oil level: Level must be in area -A-.



#### Note

- ◆ *If oil level is above area -A-, excess oil must be drained.*
- ◆ *If oil level is below area -A-, the hydraulic system must be checked for possible leakage (repair measure), simply replenishing is not sufficient.*
- ◆ *If the hydraulic system shows no leakages, in Brazil only use Oil -325 029 901 1-. For other countries, when filling the system, attention should be paid to the red color of the Oil -325 029 901 1- or yellow Oil -G 002 000- .*



- Install the lid with a screwdriver

Oil at operating temperature (as from approx. 50° C):

- The engine must be switched off and the front wheels aligned



- Remove the lid with a screwdriver -arrow-
- Clean oil level measuring stick with a clean cloth
- Install the lid by hand and remove it again.



#### Note

Only the second oil level measurement must be considered.

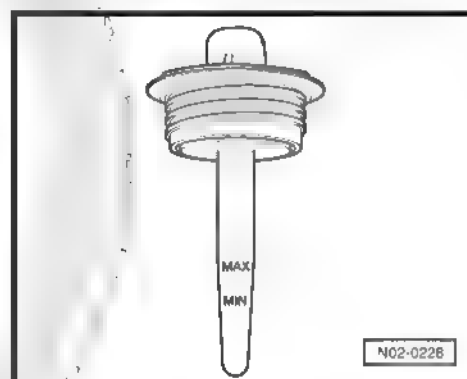
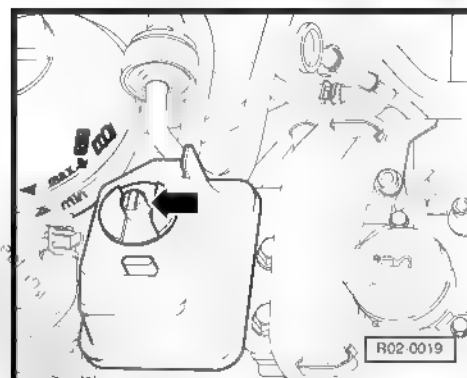
- Check oil level: Oil level must be between the markings -MIN- and -MAX-.



#### Note

- ◆ If oil level is above marking -MAX-, oil must be drained.
- ◆ If oil level is below marking -MIN-, the hydraulic system must be checked for possible leakage (repair measure), simply replenishing oil is not sufficient.
- ◆ If the hydraulic system shows no leakages, in Brazil only use Oil -325 029 901 1-. For other countries, when filling the system, attention should be paid to the red color of the [Oil -325 029 901 1- or yellow Oil -G 002 000-.

- Install the lid with a screwdriver.



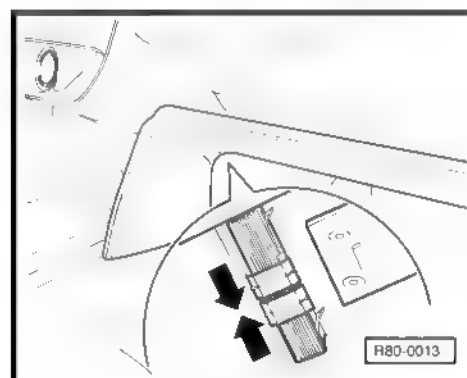
## 4.31 Dust and pollen filter - Replace filter element

The filter is located in the ventilation chamber at the right of the instrument panel, below the glove compartment.

### 4.31.1 Behr chamber

Perform the following work sequence:

- Join the two sliding locks -arrows- to the stop.





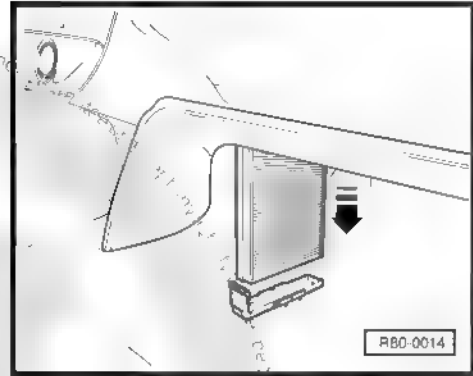
- Remove the dust and pollen filter -arrow- with the filter support.
- Separate the filter from the support.



**WARNING**

- ◆ *Observe disposal regulations!*

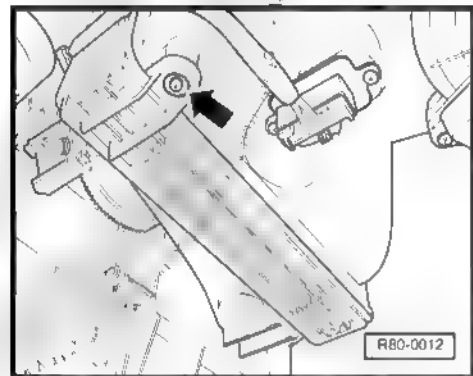
- Install in reverse order.



#### 4.31.2 Denso chamber

Perform the following work sequence:

- Loosen the screw -arrow- of the filter compartment lid.



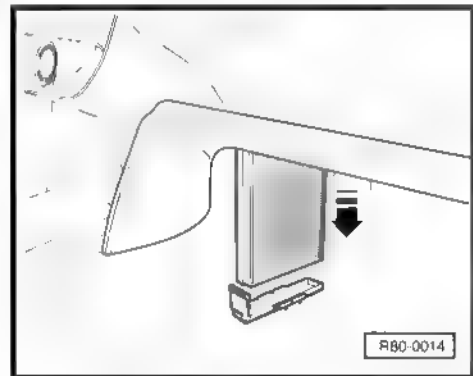
- Remove dust and pollen filter with support in direction of arrow.
- Separate the filter from the support.



**WARNING**

- ◆ *Observe disposal regulations!*

- Install in reverse order.



#### 4.32 Toothed belt driving camshaft - Check

- Remove the mechanical distribution upper cover.
- Check toothed belt condition for
  - ◆ Tears, cross-sectional ruptures
  - ◆ Separation of layers (toothed belt body, cordons).
  - ◆ Rupture in belt body.
  - ◆ Frayed cordons.
  - ◆ Tears on the surface (plastic lining)
  - ◆ Oil and grease residues

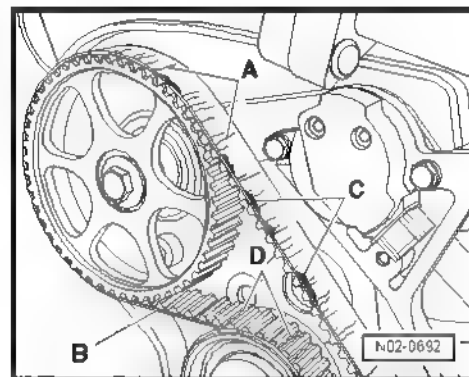


#### Note

*If defects are found, the toothed belt must be replaced. This will avoid breakdowns and operational failures*

When checking the condition, special attention must be paid to the following types of damage

- A - Tears (cover side)
- B - Lateral wear
- C - Fraying.
- D - Tears (at the base of the teeth)

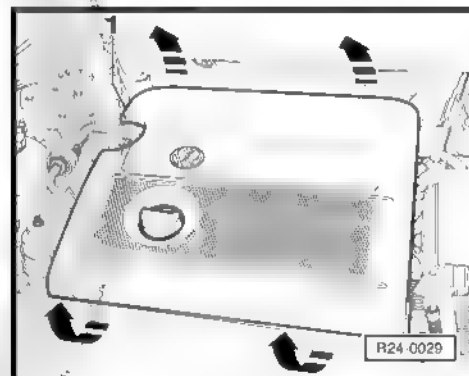


### 4.33 Air filter - Clean housing and replace filter element

#### 4.33.1 Identification letters for BAH, BLN, and BPA engines

Perform the following work sequence:

- Remove the air ventilation hose from oil sump -1- from air filter casing.
- On the BPA engine, also remove the left aeration hose for the 3-way valve of the cold start system.
- Remove the air filter housing from the supports and from the Throttle valve module -J338- -arrows- and remove the air filter housing.



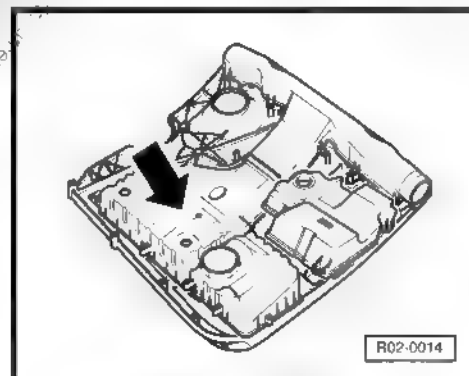
- Remove air filter housing fastening screws -arrow-.
- Remove the filtering element.



#### WARNING

◆ Observe disposal regulations!

- Clean the filter housing and install a new filter element
- The installation is performed in the reverse order from removal

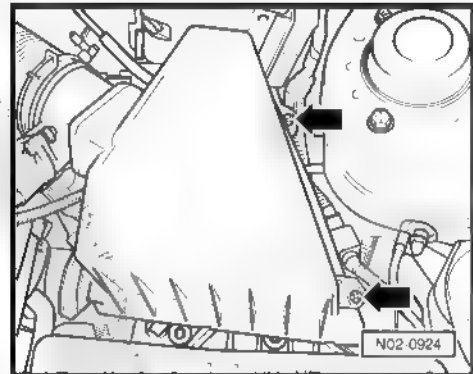




#### 4.33.2 Identification letters of CCRA and CFZA engines

Perform the following work sequence:

- Loosen the screws -arrows- and remove the air filter cover
- Clean the filter housing and install a new filter element.
- The installation is performed in the reverse order from removal



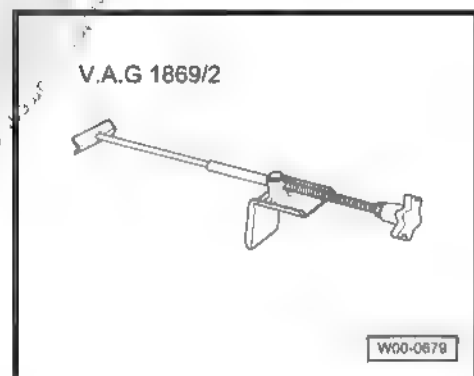
#### 4.34 Fuel filter - Replace

⇒ Engine - Supply system and ignition; Rep. Gr. 20 ; Fuel supply system

#### 4.35 Brake fluid - Replace

Special tools and workshop equipment required

- ◆ Brake pedal compression device -VAG 1869/2-

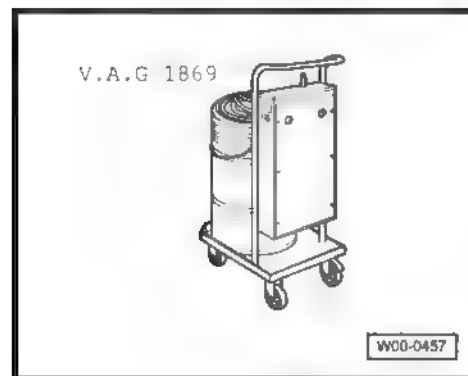


- ◆ Brake replenishment and bleed equipment -VAS 5234-





◆ Break bleeding device -VAG 1869-



◆ Break bleeding device -V.A.G 1869- with Adapter -V.A.G 1869/4-

Always use brake fluid according to American norm US FMVSS 116 DOT 4)

Authorized brake fluid specifications for vehicles up to model-year 2005:

- ◆ Brake fluid corresponds to US norm FMVSS 116 DOT 4 (brake fluid used to date)
- ◆ Brake fluid corresponds to VW norm VW 501 14 (new brake fluid).

Authorized brake fluid specification for vehicles as from model-year 2006:

- ◆ Brake fluid corresponds to VW norm VW 501 14 (new brake fluid)



**WARNING**

- ◆ *Do not put brake fluid in contact with liquids containing mineral oil (oil, gasoline, cleaning material). Mineral oils will damage sealings and brake system hoses.*
- ◆ *The brake fluid is toxic. Due to its acidic properties it should not come into contact with painted surfaces.*
- ◆ *Brake fluid is hygroscopic, i. e. it absorbs ambient air humidity; for this reasons it is stored in hermetically closed containers.*
- ◆ *Wash away with plenty of water any spilt brake fluid.*
- ◆ *Observe disposal regulations!*

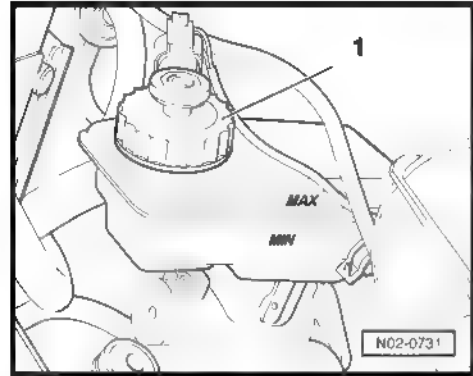
Perform the following work sequence:

Follow the working instructions for the Brake replenishment and bleed equipment -VAS 5234- and Break bleed device -VAG 1869-.





- Remove the cover -1- from the brake fluid reservoir



- Aspirate with a hose of the Brake replenishment and bleed equipment -VAS 5234- -1-, or Break bleeding device -VAG 1869- or with a suction flask with filter, removing as much brake fluid as possible.

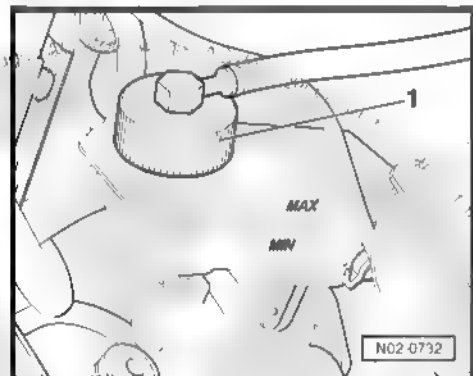


**Note**

*Do not reuse the aspirated (used) brake fluid.*



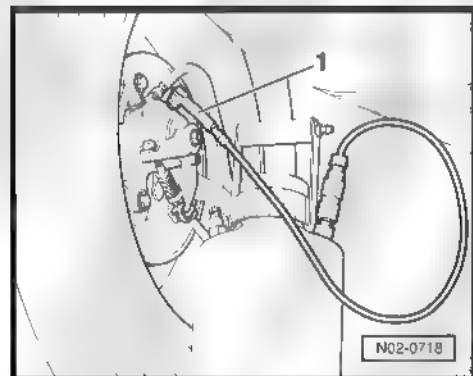
- Install the Brake pedal tensioner -VAG 1869/2- between the driver's seat and the brake pedal, pressing it.
- Connect adaptor -1- to the brake fluid reservoir.
- Connect the hose of the Brake replenishment and bleed equipment -VAS 5234- or the Break bleeding device -VAG 1869- to the adaptor.
- Remove protection covers from bleeding screws.
- Position breathing hose -1- of the drain flask on the rear end of the bleeding screw, loosen the bleeding screw and allow a corresponding quantity of brake fluid to bleed (see chart below).



- Tighten the bleeding screw.

In vehicles with left hand steering wheel, bleeding should begin at the right rear wheel, with right hand steering wheel at the left rear wheel, because of the greater distance to the master cylinder.

- Repeat the procedure at the other rear side of the vehicle.
- Position breathing hose -1- of the drain flask on the rear end of the bleeding screw, loosen the bleeding screw and allow a corresponding quantity of brake fluid to bleed (see chart below).





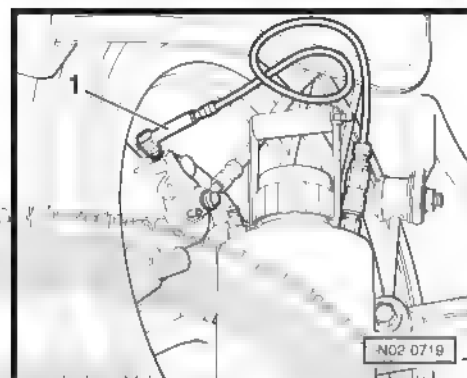
- Tighten the bleeding screw.

In vehicles with left hand steering wheel, bleeding should begin at the right rear wheel, with right hand steering wheel at the left rear wheel

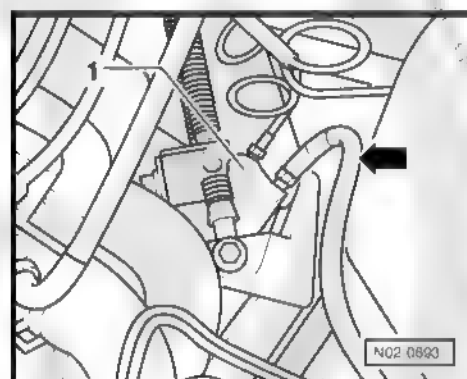
- Repeat the procedure at the other rear side of the vehicle.

Vehicles with 5-speed manual transmission:

- Remove the protection from the clutch actuator piston bleeding screw.
- Connect the hose of -VAG 1793- -arrow- to clutch piston actuator -1-, loosen the bleeding screw to bleed approximately 0.1 liter.



- Tighten the bleeding screw.
- Press the clutch pedal several times.



Brake shoes wheel brake cylinder se- quence	Brake fluid quantity to be drained from brake cylin- ders, or rather brake fittings:
right hand rear	0.25 liter
left hand rear	0.25 liter
right hand front	0.25 liter
left hand front	0.25 liter

Total quantity: 1 liter <sup>10)</sup>

<sup>10)</sup> of brake fluid drained from the brake fluid reservoir and the quantity replaced at the hydraulic clutch actuator

- Install protection covers on bleeding screws.
- Change passage lever position of the Brake replenishment and bleed equipment -VAS 5234- or the Break bleeding device -VAG 1869- to position -B- (see operation instruction).
- Remove the passage hose from the adapter.
- Remove the adapter from the brake fluid reservoir.
- Install the brake fluid reservoir lid.
- Remove the Brake pedal tensioner -VAG 1869/2- between the driver's seat and the brake pedal, pressing it.
- Check brake pedal pressure and clearance. Max. clearance 1/3 of pedal stroke.



#### WARNING

*Never forget to adjust the brake fluid reservoir level.*

*Never allow the level to reach the minimum, otherwise air may enter the circuit.*

*Do not reuse the aspirated (used) brake fluid!*

## 4.36 Brake fluid level (result of brake pad/lining wear) - Check

Use only new original VW brake fluid.



#### WARNING

- ◆ *Do not allow brake fluid to contact liquids containing mineral oil (oil, gasoline, cleaning products). Mineral oils will damage sealings and brake system hoses.*
- ◆ *The brake fluid is toxic. It must also not be allowed to touch the paint for its corrosive effect.*
- ◆ *Brake fluid is hygroscopic, i. e. it absorbs ambient air humidity; for this reason it is stored in hermetically closed containers.*
- ◆ *Wash away with plenty of water any spilled brake fluid*
- ◆ *Observe disposal regulations!*

Pay attention to the following.

Delivery inspection:

On delivery inspection the brake fluid level must be at the maximum mark.



#### Note

*To avoid brake fluid overflowing the reservoir, the maximum mark must not be exceeded.*

Inspection service:

- The brake fluid level should always be evaluated according to brake pad wear. During vehicle operation, there is a reduction of brake fluid level due to brake pad wear and due to the automatic brake pad adjustment.
- With the brake fluid level at the minimum mark or slightly above that, replenishment becomes necessary if the brake pad wear limit is almost reached.
- With new brake pads or pads still far from their wear limits the brake fluid level must be between the minimum and maximum markings.
- If the brake fluid level falls below the minimum mark, the brake system must be examined before replenishing (repair measure).

### 4.37 Headlight adjustment - Check and adjust, as necessary

⇒ Electrical system; Rep. Gr. 94 ; Switches, lights and external lamps

#### 4.37.1 Adjust headlights

Main headlights (simple and double parables)

⇒ Electrical system; Rep. Gr. 94 ; Switches, lights and external lamps

Fog lights

⇒ Electrical system; Rep. Gr. 94 ; Switches, lights and external lamps



#### 4.38 Perform test cycle

The following items depend on vehicle equipment and conditions offered (city/country).

During a test drive the following items must be evaluated.

- Engine: Power, ignition failures, behavior at idle, acceleration.
- Clutch: Starting behavior, pedal pressure, odor
- Transmission: Mobility, gear lever position
- ABS function: During ABS controlled braking, brake pedal pulsation must be felt.
- Service brake and parking brake: Operation, idle and action stroke, unilateral pulls, vibration, grinding of the brakes.
- Steering: Operation, steering wheel play, steering wheel in intermediate position that coincides with front wheels in straight position.
- Radio: Reception, interference noises.
- Air conditioning: Operation.
- Vehicle: Pulling to the side during a straight line route (plain road).
- ?Balancing: Wheels, semi-articulated shafts.
- Wheel bearing: Noise.
- Engine: Hot starting behavior.



## 5 Additional jobs based on country legislation



### Note

*Exhaust emissions test are valid only for countries that do not specify emissions guidelines.*

### 5.1 Exhaust tests



### Note

- ◆ *Observe the specific recommendations for the country.*
- ◆ *The exhaust gas tests described below were carried out in accordance with the standards in effect in Germany.*

Exhaust gas test intervals in Germany:

Vehicles with adjusted catalyzer or vehicles equipped with diesel engines:

- ◆ 3 years after the first approval and then every 2 years.
- ◆ Vehicles used for the commercial transportation of people, e.g., taxis: every 12 months.

Exhaust gas test for diesel engines ⇒ [page 94](#).

Exhaust gas test for gasoline engines ⇒ [page 80](#).

#### 5.1.1 Exhaust gas test for gasoline engines

Exhaust gas test for gasoline engines without OBD

Exhaust gas test for gasoline engines with OBD

The test sequence was prepared to carry the test out with the combination of test devices for the analysis of exhaust gases, composed of:



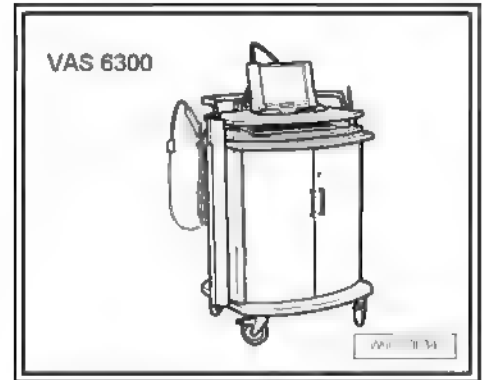
### Note

- ◆ *The following description is for vehicles equipped with "On-Board Diagnostics", OBD with adjusted catalyzer.*
- ◆ *The OBD checks all components and systems that influence exhaust gas quality.*

Special tools and workshop equipment required



- ◆ Gas analyzer - 4 components (CO, CO<sub>2</sub>, HC and O<sub>2</sub>) or GAS ANALYZER -VAS 6300-



- ◆ OBD adapter cable -VAS 5052/16-



#### Note

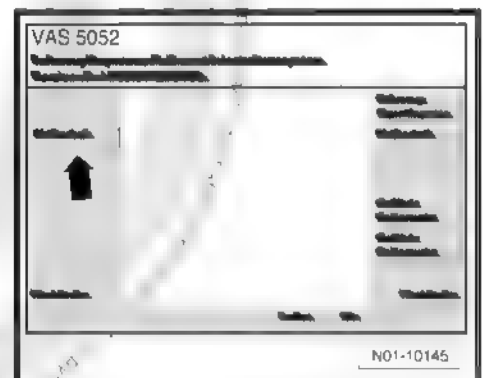
- ◆ *It is only possible to test exhaust gases when all devices that compose Gas analyzer - 4 components (CO, CO<sub>2</sub>, HC and O<sub>2</sub>) or GAS ANALYZER -VAS 6300- are operating and inter-connected, according to the operation instructions.*
- ◆ *All jobs to be done are indicated by Gas analyzer - 4 components (CO, CO<sub>2</sub>, HC and O<sub>2</sub>) or GAS ANALYZER -VAS 6300-.*

#### Previous inspection conditions:

- All inspection conditions and data required to test the exhaust gases are available in the respective engine's exhaust gas test datasheet ⇒ Data sheets for exhaust emission test.
- The exhaust gas test sheet must be printed to allow the bar codes to be read
- Automatic gearbox: Position selection lever "P" or "N".
- Manual gearbox: Selection lever in Neutral.
- ?Activated ?parking brake.
- Test the exhaust gases as per the instructions provided on the screen.

#### Start screen:

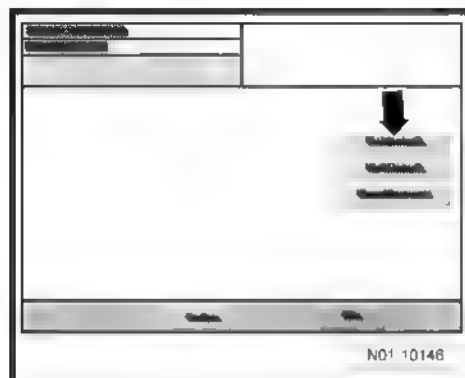
- Select the function -arrow-, "Exhaust tests".



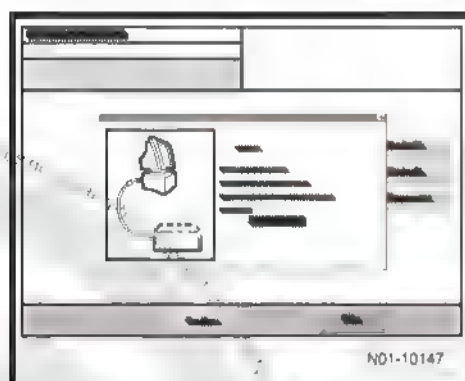


The general view to select the respective type of exhaust gas tests appears.

- Select "Gasoline exhaust gas tests" -arrow-.



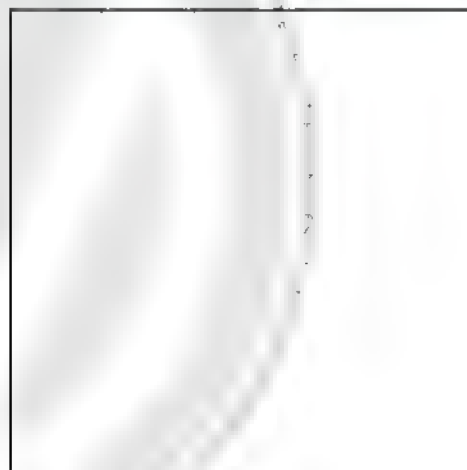
The heating period indication appears.



- Continue the exhaust gas test as per the instructions provided on the screen.
- When the selection of the theoretical value of the exhaust gas appears, select "Select the theoretical value of the exhaust gases", -arrow-.
- ◆ Select "Predefined value" when regarding the first exhaust gas test,
- ◆ Or when it is necessary to run an exhaust gas test again, select "last vehicle".
- Press "Continue, "1-.

Entering vehicle data:

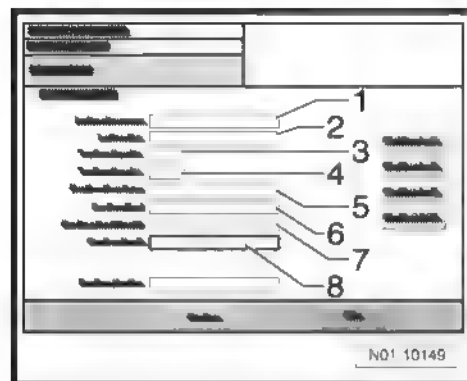
When the vehicle data entry menu appears:







- Enter, in positions -1...7-, the vehicle data, as per the vehicle's documentation.
- ◆ -1- Manufacturer: "e.g. VOLKSWAGEN — VW"
- ◆ -2- Type of vehicle: "e.g., 1J"
- ◆ -3- Code number for 2: "z B. 0603"
- ◆ -4- Code number for 3: "e.g. 358"
- ◆ -5- Engine identification letters "e.g., AQY"
- ◆ -6- License plate: "e.g. WOB-HH 1234"
- ◆ -7- Vehicle identification number: "e.g. WVVZZZ9NZYW123456"
- Enter in position- 8 - the mileage "e.g., 32000".



#### Note

- ◆ With the **SKIP** key, other functions may be activated.
- ◆ With the **SKIP** you can stop the test.

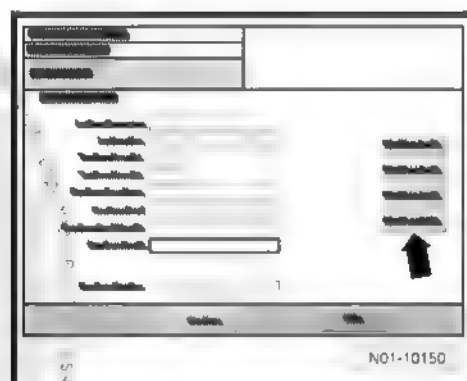
- Select "with OBD", -arrow-.

Entering nominal exhaust gas test data:



#### Note

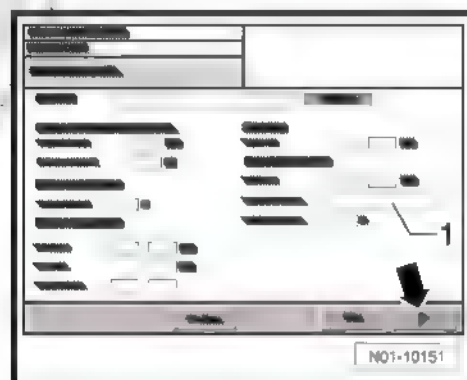
- ◆ If the nominal values do not exist as bar codes, they must be entered manually.
- ◆ All inspection conditions and data required to test the exhaust gases appear in the respective engine's exhaust gas test datasheet.



- Follow screen instructions during manual data entry.

- With "Inspection values for exhaust gas tests" on the screen, enter the values that appear in the exhaust gas test data sheet successively:

- 1 - Test rotation (idle speed)
  - 2 - Catalyzer warming period
  - 3 - Engine temperature
  - 4 - High idling speed
  - 5 - CO content with high idling speed
  - 6 - Lambda probe with the high idle speed rotation
  - 7 - Idling speed
  - 8 - Select the type of adjustment probe, among "Enriching probe" or "Broadband probe" -1 -.
  - 9 - Value of the Lambda probe
- Then, enter all of the data properly, press "Continue" -arrow-.





#### Entering nominal exhaust gas test data using bar codes:

- If the nominal exhaust gas test data are available with the bar codes, read the exhaust gas test datasheet bar code with the reading pencil.

The indication of all required data appears on the screen.

- Activate -arrow- to continue the process.



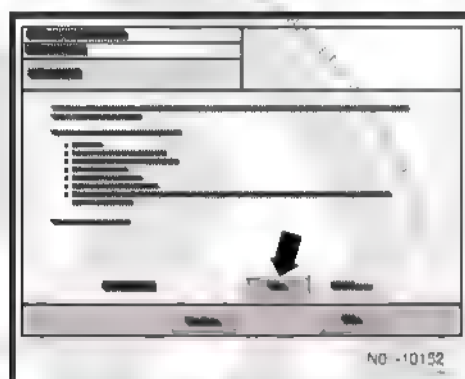
#### Visual inspection:

- Follow screen instructions.
- Run visual inspections.
- If there are no problems, press "OK" -arrow-.

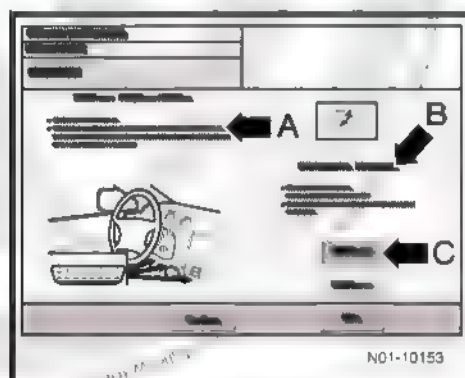


#### Note

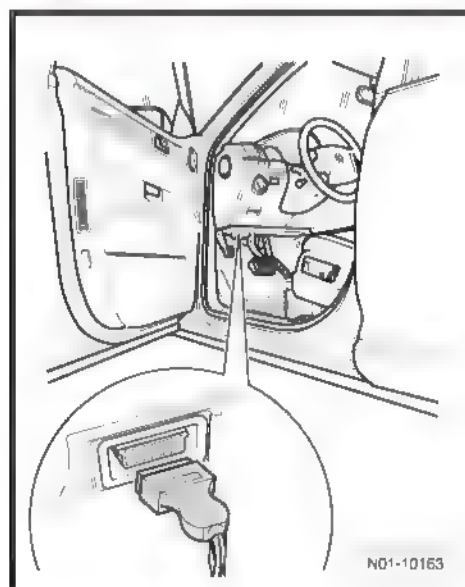
*When you press Not OK, a new test begins.*



To the side, you can see a test check indicator that requires the connection of diagnostic connector - A -, as well as to check lamp MI - B -.

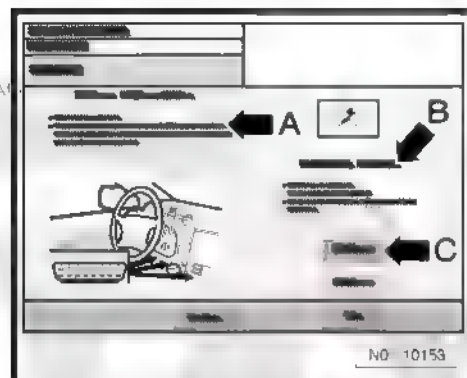


- Follow screen instructions.
- Turn the ignition off.
- Connect the diagnostic cable to the EOBD plug.





- Turn the ignition on.
- Perform a visual inspection of "Lamp MI".
- When the lamp turns on, press "Lamp on" - arrow C -.



- Follow screen instructions, - arrow C - and - arrow A -.
- ◆ Start the engine.
- ◆ Perform an check with the MI lamp.
- Introduce the exhaust gas probe in the exhaust gas output tube.



#### Note

*The exhaust gas test process continues if the measurement probe is in the exhaust gas outlet tube.*

It commutes automatically to the Readiness Code.

The Readiness Code checks whether all command devices work.



#### Note

- ◆ *If all indication values are at zero, no probe inspection test is performed.*
- ◆ *If not all indication values are at zero, a probe inspection test is performed later.*

- Confirm the status of "Lamp MI" - arrow B-.

Catalyzer condition:

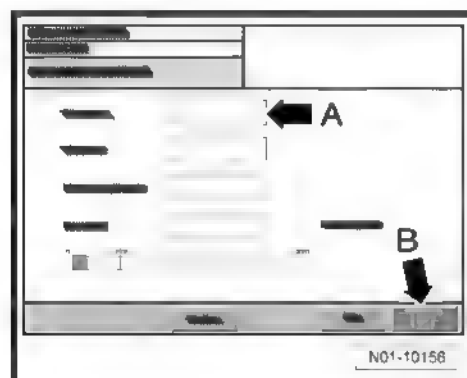
This is commuted automatically to the catalyzer heating phase.

- Follow screen instructions.

The measurement begins as soon as engine rotations reaches the required level.

- Keep engine rotation at the required level.

The time that remains for the performance of the heating phase is shown -arrow A-.





#### Heating period:

Is commuted automatically to show the engine temperature

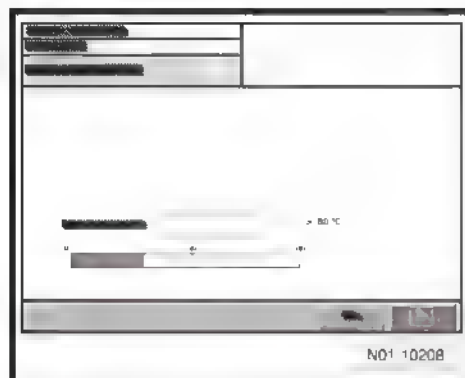
- Follow screen instructions.



#### Note

*This indication only appears before engine temperature reaches 80 degrees Celsius.*

- The engine's temperature must reach the required level.



#### Measurement with high idle speed rotation:



Commuted automatically to show the high idle speed measurement.

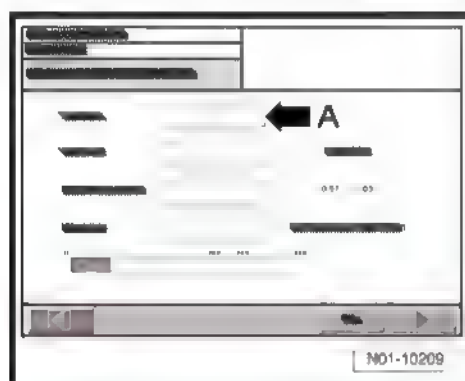
- Follow screen instructions.

The measurement begins as soon as engine rotations reaches the required level.



#### Note

- ♦ With the  - it is possible to annul the measurement, i.e., not test the exhaust gases.
- ♦ With the  - the measurement values are reset and the test can be repeated.



- Keep engine rotation at the required level.

The time remaining for the measurement appears on -arrow A -.



#### Idle speed measurement and CO content:

Automatically commuted to show the idle speed and CO content measurements.

The measurement begins as soon as engine rotations reaches the required level.

The time remaining for the measurement appears in -arrow A-.

Probe check test:



Note

*The probe test is not done when all Readiness Code values are at zero.*

It commutes automatically to show the probe check test.



Note

*The probe checking test is done individually for each Lambda probe .*

The measurement begins as soon as engine rotations reaches the required level.

- Keep engine rotation at the required level.

The time remaining for the measurement appears in -arrow A-.

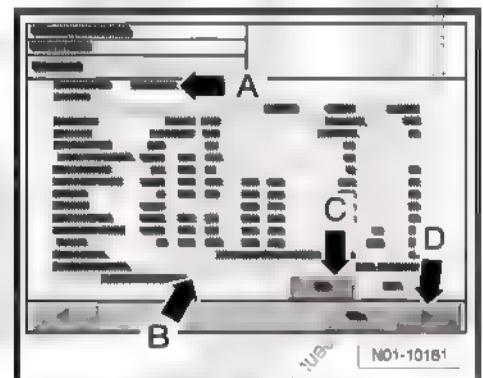
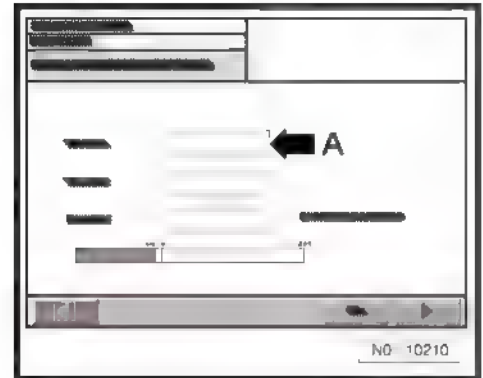
#### Assessment:

The report will appear on the screen after the exhaust gas test is complete.

The test result appears.


Notes regarding the exhaust gas test may be entered here-arrow A-. They are included in the test report.

- After performing the exhaust gas test successfully, select, on the suspended menu - arrow B - "Attributed exhaust gas test board" and the date.
- Confirm with "Yes" - arrow C -.
- Then, press it.





After confirmation, the printer automatically runs two "TEST CERTIFICATES"

- To get other certificates, press - arrow A - "Print".
- Follow screen instructions
- Remove the exhaust gas probe from the exhaust gas final tube
- Then press  - arrow B-.

The exhaust gas test is complete. It is possible to run another exhaust gas test.

Exhaust gas test for gasoline engines without OBD



#### Note

- ◆ *All test conditions and data required for the exhaust gas test: ⇒ "Test exhaust gases"*
- ◆ *The ignition point is determined by Engine control unit -J623- and will not be shown. It is not possible to make an adjustment.*
- ◆ *The idle speed and CO content are not adjustable (only checked). In the event actual and theoretical values diverge: perform a Repair Measure!*
- ◆ *The CO content is adjusted to the theoretical value by the lambda probe check. Lambda probe inspection defects are processed by Diagnosis, Measurement and Information System -VAS 5051A/52- and memorized in the fault memory.*
- ◆ *When checking the fault memory, detected faults (electronic engine system) must be eliminated and deleted from the fault memory.*
- ◆ *To avoid injuries and/or ignition and injection system destruction, the injection system's cables (also the high-voltage cables) must only be connected and disconnected with ignition off.*

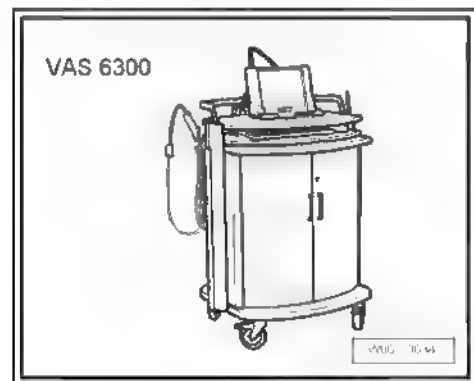


#### Note

*The following description is for vehicles without OBD with adjusted catalyzer.*

Special tools and workshop equipment required

- ◆ Gas analyzer - 4 components (CO, CO<sub>2</sub>, HC and O<sub>2</sub>) or GAS ANALYZER -VAS 6300-



- ◆ Adaptor for older vehicles -VAS 5051/2-
- or

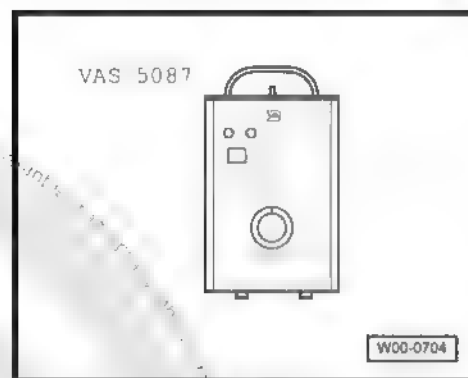


- ◆ Rotation adapter -VAS 5087/ A-
- ◆ Exhaust gas test orderer



#### Note

- ◆ *It is only possible to test exhaust gases when all devices that compose Gas analyzer - 4 components (CO, CO<sub>2</sub>, HC and O<sub>2</sub>) or GAS ANALYZER -VAS 6300- are operating and inter-connected, according to the operation instructions.*
- ◆ *All jobs to be done are indicated by Gas analyzer - 4 components (CO, CO<sub>2</sub>, HC and O<sub>2</sub>) or GAS ANALYZER -VAS 6300-.*

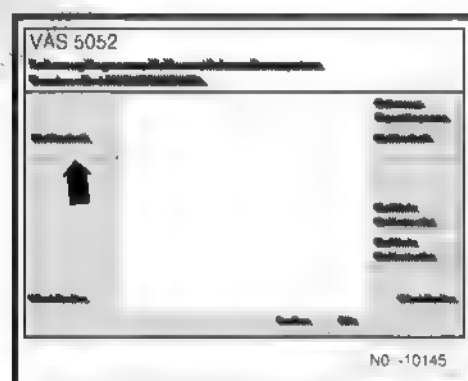


#### Previous inspection conditions:

- All inspection conditions and data required to test the exhaust gases are available in the respective engine's exhaust gas test datasheet ⇒ Data sheets for exhaust emission test.
- The exhaust gas test sheet must be printed to allow the bar codes to be read.
- Automatic gearbox: Position selection lever "P" or "N".
- Manual gearbox: Selection lever in Neutral.
- ?Activated ??parking brake.
- Test the exhaust gases as per the instructions provided on the screen.

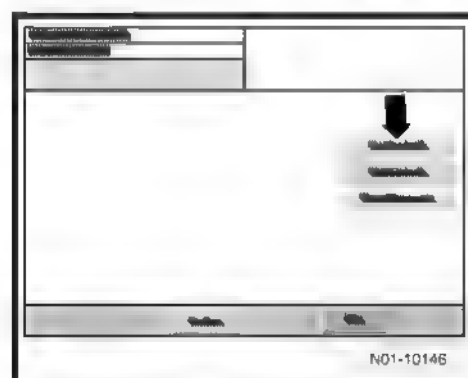
#### Start screen:

- Select the function-arrow-, "Exhaust tests".



The general view to select the respective type of exhaust gas tests appears.

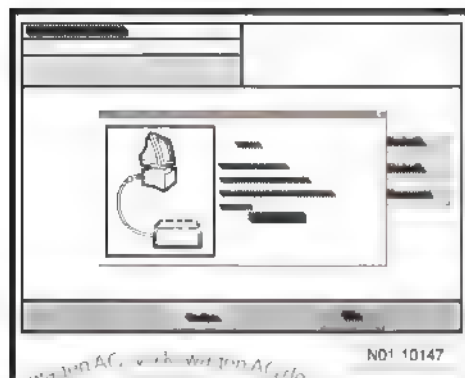
- Select "Gasoline exhaust gas tests" -arrow-.







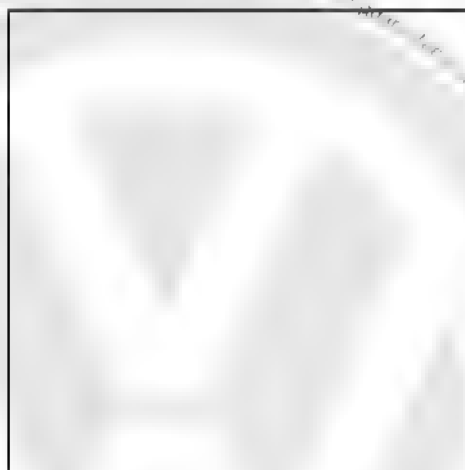
The heating period indication appears.



- Continue the exhaust gas test as per the instructions provided on the screen.
- When the selection of the theoretical value of the exhaust gas appears, select the respective "Select the theoretical value of the exhaust gases", -arrow-.
- ◆ Select "Predefined value" when regarding the first exhaust gas test,
- ◆ Or when it is necessary to run an exhaust gas test again, select "last vehicle".
- Load on indication "Continue," refer to -1-

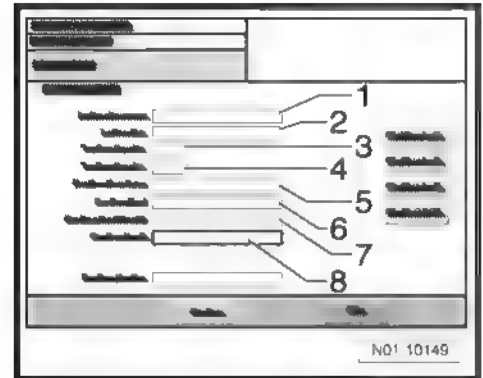
Entering vehicle data:

The vehicle data entry menu appears.





- Enter, in positions -1...7-, the vehicle data, as per the vehicle's documentation.
- ◆ -1- Manufacturer: "e.g. VOLKSWAGEN — VW"
- ◆ -2- Type of vehicle: "e.g., 1J"
- ◆ -3- Code number for 2: "z.B. 0603"
- ◆ -4- Code number for 3: "e.g. 358"
- ◆ -5- Engine identification letters "e.g., AQY"
- ◆ -6- License plate: "e.g. WOB-HH 1234"
- ◆ -7- Vehicle identification number: "e.g. WVWZZZ1JZYW123456"
- Enter, in space - 8 - the mileage "e.g., 32000".



**Note**

- ◆ Using the Skip key, other functions may be activated.
- ◆ Using the Skip key, you can stop the test.

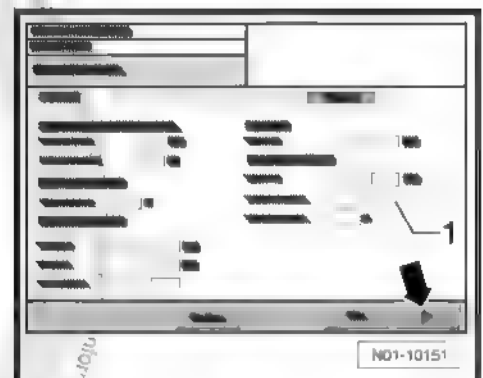
Entering nominal exhaust gas test data:

**Note**

- ◆ If the nominal values do not exist as bar codes, they must be entered manually.
- ◆ All inspection conditions and data required to test the exhaust gases appear in the respective engine's exhaust gas test datasheet.

Manually entering nominal exhaust gas test data:

- Follow screen instructions during manual data entry.
- With "Inspection values for exhaust gas tests" on the screen, enter the values that appear in the exhaust gas test datasheet successively:
  - 1- Test rotation (idle speed)
  - 2- Catalyzer warming period
  - 3- Engine temperature
  - 4- Increased idling speed
  - 5- CO content with high idling speed
  - 6- Lambda with high idling speed rotation
  - 7- Idle speed
  - 8- Select the type of probe adjustment: "Enriching probe" or "Broadband probe" - 1 -.
  - 9- Lambda probe value
- Then, enter all of the data properly, press "Continue" -arrow-



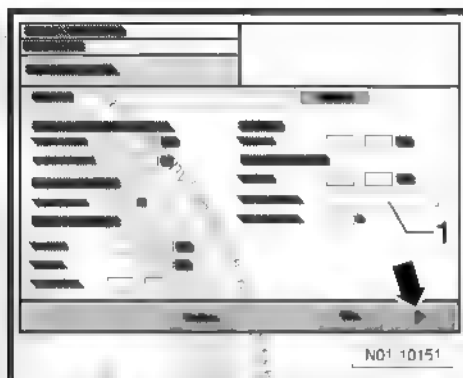


#### Entering nominal exhaust gas test data using bar codes:

- If the nominal exhaust gas test data are available with the bar codes, read the exhaust gas test datasheet bar code with the reading pencil.

The indication of all required data appears on the screen.

- Press the -arrow- to continue the process.



#### Visual inspection:

- Follow screen instructions.
- Run visual inspections.
- If there are no problems, press "In order" -arrow-.

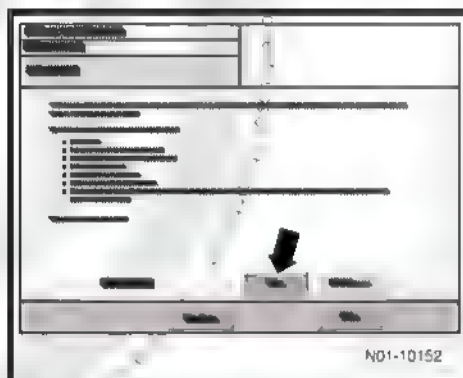


#### Note

*When you press Not OK, a new test begins.*

The visual inspection indication appears here with the notification to connect the cable to the vehicle.

- Follow screen instructions.
- Turn the ignition off.
- Connect the Adaptor for older vehicles -VAS 5051/2- or Rotation number adaptor -VAS 5087/- or the Diagnostic cable -VAS 5051/6A- to the vehicle.



#### Note

- ♦ *It is not possible to turn the inductive sensor to cylinder 1 on in a few engines.*
- ♦ *For these engines, you can use Rotation number adaptor -VAS 5087/-.*
- ♦ *For a few engines, it is necessary to use Rotation number adaptor -VAS 5087/-.*
- Turn the ignition on.
- Introduce the exhaust gas probe in the exhaust gas output tube.



#### Note

*The exhaust gas test process continues if the measurement probe is in the exhaust gas outlet tube*

It commutes automatically to the Readiness Code

Catalyzer condition:

This is commuted automatically to the catalyzer heating phase

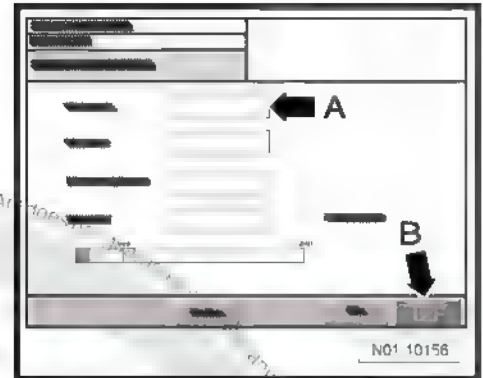


- Follow screen instructions.

The measurement begins as soon as engine rotations reaches the required level.

- Keep engine rotation at the required level.

The time that remains for the performance of the heating phase is shown -arrow A-.



#### Heating period:

Is commuted automatically to show the engine temperature.

- Follow screen instructions.



#### Note

*This indication only appears before engine temperature reaches 80 degrees Celsius.*

- The engine's temperature must reach the required level.



#### Measurement with high idle speed rotation:

Commuted automatically to show the high idle speed measurement.

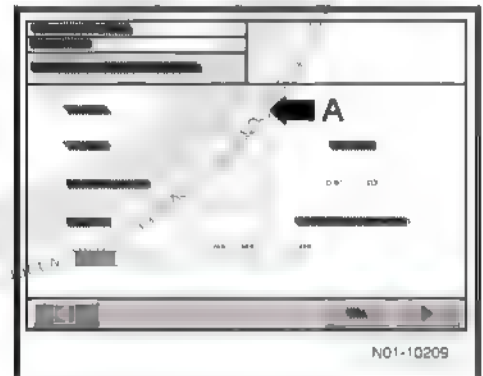
- Follow screen instructions.

The measurement begins as soon as engine rotations reaches the required level.



#### Note

- ◆ With the ☐ it is possible to annul the measurement, i.e., not test the exhaust gases.
- ◆ With the ☐ the measurement values are reset and the test can be repeated.



- Keep engine rotation at the required level.

The remaining time for the measurement is shown -arrow A-.



#### Idle speed measurement and CO content:

Automatically commuted to show the idle speed and CO content measurements.

The measurement begins as soon as engine rotations reaches the required level.

The remaining time for the measurement is shown -arrow A -.

#### Probe adjustment test:

It commutes automatically to show the probe check test.

The measurement begins as soon as engine rotations reaches the required level.

- Keep engine rotation at the required level.

The remaining time for the measurement is shown -arrow A -.

#### Assessment:


The report will appear on the screen after the exhaust gas test is complete.

The test result appears.

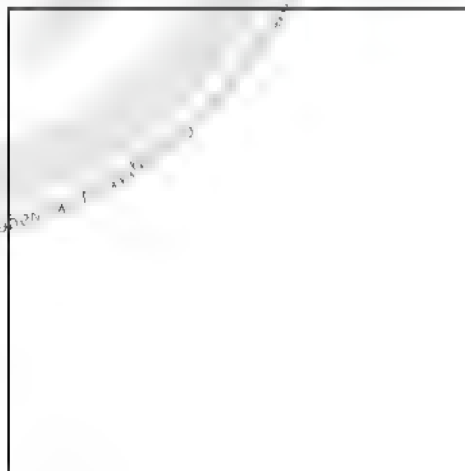
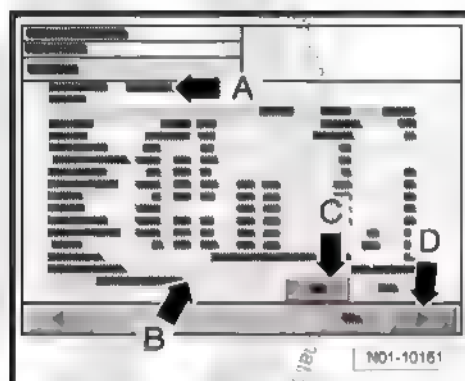
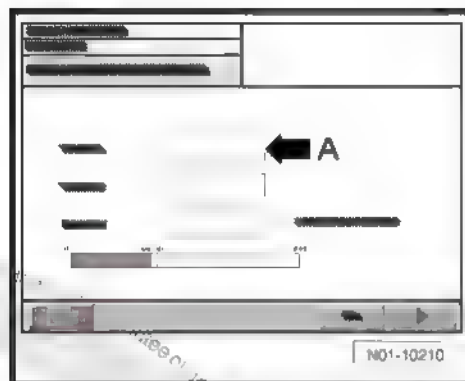
Notes regarding the exhaust gas test may be entered here -arrow A-. They are included in the test report.

- After performing the exhaust gas test successfully, select, on the suspended menu - arrow B - "Attributed exhaust gas test board" and the date.
- Confirm with "Yes", refer to - arrow C -.

After confirmation, the printer automatically runs two "TEST CERTIFICATES".

- To get other certificates, press - arrow A - "Print".
- Follow screen instructions.
- Remove the exhaust gas probe from the exhaust gas final tube.
- Then, press the  - arrow B-.

The exhaust gas test is complete. It is possible to run another exhaust gas test.



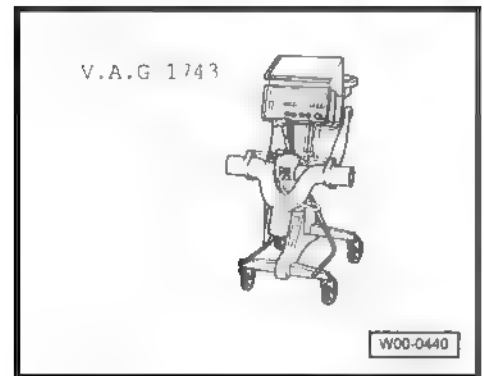
### 5.1.2 Exhaust gas test for diesel engines

The test sequence was prepared to carry the test out with the combination of test devices for the analysis of exhaust gases.

Special tools and workshop equipment required



- ◆ Diesel engine test device -V.A.G 1743-

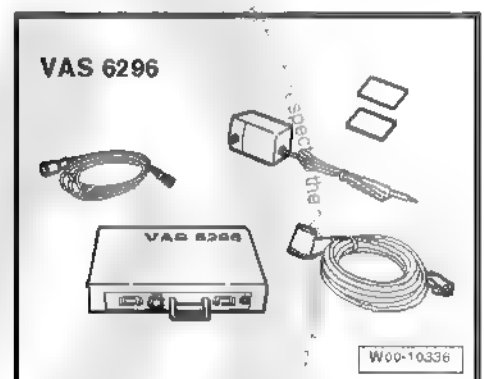


- ◆ Rotation adapter -VAS 5087 A-



- ◆ or

- ◆ Rotation adapter -VAS 6296-



- ◆ Data reading device -V.A.G 1798-
- ◆ or
- ◆ Data reading device -V.A.G 1799-
- ◆ ⇒ Data sheets for exhaust emission test



#### Note

- ◆ *All test conditions and data required for the exhaust gas test → Data sheets for exhaust emission test*
- ◆ *If possible, the test should be done after a test drive. If for some reason (atmospheric conditions, inadmissible noise level in residential areas) this is not possible, the test can also be done at the workshop.*
- ◆ *During measuring, the engine's hood must be partially closed due to the noise.*



Perform a visual inspection of the components that influence exhaust gases

- Perform the visual inspection for:
  - ◆ Time of existence
  - ◆ Integrity
  - ◆ Not leaking
  - ◆ Damage



**Note**

*If defects are found, they must be eliminated*

**Test conditions**

- Minimum engine temperature of 80°C
- No memory fault

**Turn on test devices**

Connect the Diesel engine test device -V.A.G 1743- as per the operation instructions.

Description, measurement process, device operation, putting in service and operation ⇒ V.A.G 1743 operating instructions



**Note**

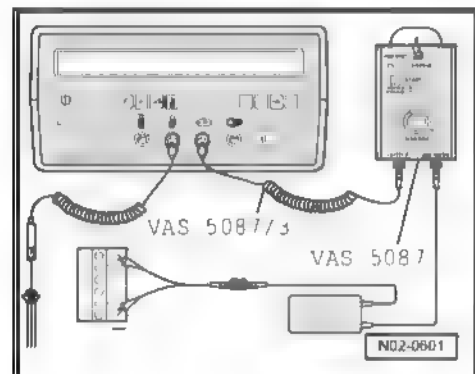
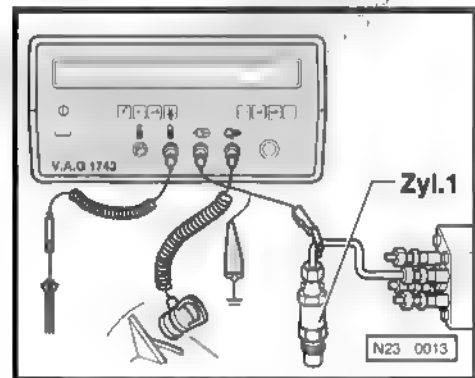
- ◆ *In engines in which the hole to the PMS sensor cannot be accessed, or which is difficult to access or large, Rotation adapter -VAS 5087 A- or the Rotation adapter -VAS 6296- can be used instead of the PMS.*
- ◆ *It is not possible to use the terminal transmitter (for cylinder 1) of Diesel engine test device -V.A.G 1743-.*

- Connect the Rotation adapter -VAS 5087 A- with the ignition off, as follows.



**Note**

- ◆ *Note the operating instructions for Rotation adapter -VAS 5087 A-!*
- ◆ *You must observe the safety instructions that are provided in the operating instructions!*
- Connect the Adaptor cable -VAS 1587/3- of the output connection of Rotation adapter -VAS 5087 A- at the inlet of the terminal transmitter of Diesel engine test device -V.A.G 1743-
- Turn the cylinder number switch to "4" (4 cylinder engine)
- Connect an Adapter -VAS 5087/1- to Rotation adapter -VAS 5087 A- (VAS 5087/1 plug)





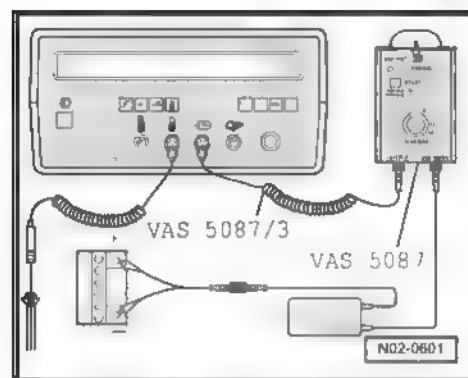


- With the other Adapter -VAS 5087/1- cable, connect to the vehicle's battery. To do so:
- ◆ Red terminal on positive
- ◆ Black terminal on negative.



#### Note

- ◆ When using Rotation adapter -VAS 5087 A-, press key "Start". The red indicator lamp must remain on for approx. 10 seconds. Then the green indicator lamp must turn on.
- ◆ In the Diesel engine test device -V.A.G 1743-, the engine's rotation must now appear.
- ◆ If the engine's rotation is incorrect or does not appear: ⇒ VAS 5087 operating instructions



#### Test sequence

- Start the engine and let it idle.
- Press on the data reading device **F2** the key to "AU diesel".

Indicated on display:

Enter the vehicle identification card!  
Manual input with the -  
> Key

- Using the data reading device's keyboard, enter the following vehicle identification data:
- ◆ License plate
- ◆ Manufacturer = "Number 2"
- ◆ Code = "for No. 2"
- ◆ Type of vehicle = "Number 3"
- ◆ Code = "for No. 3" (the three first digits)
- ◆ Vehicle identification number = "Number 4"
- ◆ Engine identification letters
- ◆ Mileage
- Confirm the vehicle identification data provided via key **Q**.

Check input with -> Key  
Confirm entry with key - Q

- Confirm the vehicle identification data provided via key **Q**.

Indicated on display:

Select bar code  
Manual input with the -> Key

- Enter the theoretical values with the data reading device's reader, sliding over the respective datasheet bar code in folder "Exhaust gas analysis".
- or
- With the **Q** make manual input as per the instructions that appear on the data reading device's display



#### Indicated on display

Check input with > Key  
Confirm entry with key - Q

- Confirm the vehicle data entered or read through key

#### Indicated on display

Visual inspection Ok = j      not Ok =

- Enter the result of the visual inspection.

#### Indicated on display:

F1 temperature measurement with sensor  
F2 enter the temperature measurement manually

- Press the to "temperature measurement with sensor".
- When the engine oil's temperature reaches 80°C, remove the sensor and introduce the oil dipstick to the stopper.
- Continue the test by pressing .

#### Indicated on display:

Idling speed ->  
Rotation ACTUAL xxxx/  
min THEORETICAL xxxx/min

- Press the .

#### Idling speed outside of the field of theoretical values:



#### Note

*The idling speed and maximum speed can be checked, but not adjusted.*

- If the values are not within the field of theoretical values, a Repair Measure must be made.
- Continue the test by pressing .

#### Indicated on display:

Engine cut rotation 5 sec.  
Rotation ACTUAL xxxx/  
min THEORETICAL xxxx...xxxx/min

- Press firmly on the throttle pedal for the required amount of time.



#### WARNING

*If the engine cut rotation is surpassed, immediately release the throttle pedal and do a Repair measure.*

#### Indicated on display:

Engine cut rotation ->  
Rotation ACTUAL xxxx/  
min THEORETICAL xxxx...xxxx/min

- Release the pedal



- Check the actual value. To do so, continue the indication of the actual value with

Engine cut rotation outside of the field of theoretical values:

- If the values are not within the field of theoretical values, a Repair Measure must be made
- Continue the test by pressing

Indicated on display:

Idling seed 1st measurement 15 sec  
Rotation ACTUAL xxxx/  
min THEORETICAL xxxx...xxxx/min

- The data reading device shows the actual values in 15 seconds.

Indicated on display:

Data transmission for the diesel test device  
Quickly press the pedal

- Press the throttle pedal firmly and keep it pressed.

With the indication on the display:

Data transmission for the diesel test device  
Free acceleration in course

- Keep the throttle pedal pressed.

Indicated on display:

Idling seed 2nd measurement 15 sec  
Rotation ACTUAL xxxx/  
min THEORETICAL xxxx...xxxx/min

- Release the pedal.

The data reading device shows the actual values in 15 seconds.

Indicated on display:

Data transmission for the diesel test device  
Quickly press the pedal

- Press the throttle pedal firmly and keep it pressed.

With the indication on the display:

Data transmission for the diesel test device  
Free acceleration in course

- Keep the throttle pedal pressed.

Indicated on display:

Idling seed 3rd measurement 15 sec  
Rotation ACTUAL xxxx/  
min THEORETICAL xxxx...xxxx/min

- Release the pedal.

The data reading device shows the actual values in 15 seconds.

Indicated on display:

Data transmission for the diesel test device  
Quickly press the pedal

- Press the throttle pedal firmly and keep it pressed.



With the indication on the display:

Data transmission for the diesel test device  
Free acceleration in course

- Keep the throttle pedal pressed.

Indicated on display:

Idling seed 4th measurement 15 sec  
Rotation ACTUAL xxxx/  
min THEORETICAL xxxx...xxxx/min

- Release the pedal.

The data reading device shows the actual values in 15 seconds.

Indicated on display:

Data transmission for the diesel test device  
Quickly press the pedal

- Press the throttle pedal firmly and keep it pressed.


With the indication on the display:

Data transmission for the diesel test device  
Free acceleration in course

- Keep the throttle pedal pressed.

Indicated on display:

Peak turbidance value- ->  
ACTUAL x,xx/  
ma THEORETICAL x...x,xx/ma

- Release the pedal.
- Press the .

Indicated on display:

Average turbidance value- ->  
ACTUAL x,xx/  
ma THEORETICAL x...x,xx/ma

- Press the .

Indicated on display:

Turbidance band width- ->  
ACTUAL x,xx/  
ma THEORETICAL x...x,xx/ma

- Press the .


Indicated on display:

Test Ok continue with key Q  
Repeat the test with key F1

- Press the .



#### Note

- ♦ Indicated on display:
- ♦ Press the  and repeat the test to do a Repair Measure.

Test not Ok continue with key - Q  
Repeat the test with key - F1



Indicated on display:

Clarification input with → Test  
Confirm entry with key - Q

- If necessary, enter clarifications by pressing .
- Press the .

Indicated on display:

Select examiner/manual input with F3  
F1 XXXXX F2 XXXXX

- With the  and  select the examiner or enter the name.
- Press the , wait for the protocol.
- Press the .
- Complete the test pressing .

## 5.2 Glossary

These explanations are only for "Maintenance Care". They are not intended to be universal!

Concept	Explanation
AU	Exhaust gas tests
ABS	(antiblock system), ABS is a brake system regulator that prevents wheel locking during braking. That way the driver can keep the vehicle stable and in control.
ATF	Automatic Transmission Fluid.
ATF Level	"Level" of the automatic transmission gear oil.
Cetane	(cetane rate) diesel fuel flammability measurement.
DIN	Deutsches Institut für Normung e.V (German Institute for Standardization).
EN	European Standard

Concept	Explanation
EOBD	European On-Board Diagnostics
FAME	Fatty Acid Methyl Ester
FSI	Fuel Stratified Injection
TFSI	Turbo (Fuel Stratified Injection)
MIL	Malfunction Indicator Light, American designation for exhaust gas light K83
NO <sub>x</sub>	Nitric oxide
OBD	On-Board Diagnostics, OBD checks all components that influence exhaust gas quality
OBD-II	American On-Board Diagnostics
PD	Pump injection unit - nozzle on diesel fuel engines
PR number	Abbreviation of product control number. Identify, among other things, additional devices, specific differences in each country, and data on the rolling rail
PM	(English: particulate matter) particular matter in diesel engine exhaust gases
QG0	Vehicles "not" equipped, from the factory, with LongLife service components. Time- or mileage-dependent intervals apply to maintenance (fixed intervals).



Concept	Explanation
QG1	Vehicles equipped from the factory with the active LongLife service. This means that the vehicles that have a flexible service interval indicator and are equipped with these components: <ul style="list-style-type: none"> <li>◆ Flexible service interval indicator on the combined instrument</li> <li>◆ Engine oil level sensor</li> <li>◆ Brake pad wear indicator</li> </ul>
QG2	The LongLife service is not active from the factory. This means that the vehicles that have a fixed service interval indicator (time- or mileage-dependent maintenance intervals) and are equipped with the following components: <ul style="list-style-type: none"> <li>◆ Fixed service interval indicator on the combined instrument</li> <li>◆ Engine oil level sensor</li> <li>◆ Brake pad wear indicator</li> </ul>
Readiness code	8-digit binary code that shows whether or not all relevant engine diagnosis procedures were carried out in terms of exhaust gases
RON	(researched octane rate) measured in the resistance of gasoline to knock
SAE	(Society of Automotive Engineers) Association that provides recommendations/guidelines on the transposition of the legal requirements (e.g., standards)
SD	Aspired diesel engine
SDI	Aspired diesel engine equipped with direct injection
SIA	Service interval indicator
SW	Key size acronym
TD	Turbo Diesel Engine
TDI	Turbo diesel engine equipped with direct injection
VEP	Distributor injection pump
ULEV	Ultra Low Emission Vehicles

Concept	Explanation
WIV	Service interval extension
Common - Rail	English term that designates a general control of the injection by high pressure, which injects fuel in all bank cylinders
DPF	Diesel particle filter; this filter is assembled after the catalyzer and filters exhaust gas particles
V Engines	V engines have cylinders placed at an angle of 60° to 120°
LongLife Service	The LongLife service allows for extremely long inspection and oil change intervals, depending on each person's driving characteristics and usage conditions. Special motor oil is required for the LongLife service
Enriching probe	Also designated as (LSH - heated lambda probe), (LSF - flat lambda probe) or oxygen sensor. The emission of the lambda value is done by means of a discontinuous growth voltage curve. The lambda value is determined based on a voltage change. The probe is used as a post-catalyzer probe.
Broadband probe	Also designated as (LSU probe) universal lambda probe. The emission of the lambda value is done by means of an approximately linear growth voltage curve of the current's intensity. The lambda value is determined based on a current intensity change. That way, the lambda value can be measured in a major measurement field (broadband). The probe is used as a pre-catalyzer.
Ash mass balance	The ash mass balance informs the particle filter volume filling level.
RDK, RKA	Tire pressure control, tire control indicator.



05.11

